#5

SEQUENCE LISTING

<110> HOLM, Jens
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LARSEN, Jorgen N.
SPANGFORT, Michael D.

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<141> 2001-11-15

<150> US 60/298,170
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Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
50 55 60

Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65 70 75 80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
85 90 95

Lys Ile Ser Asn Glu Ile Val Ile Val Ala Thr Pro Asp Gly Gly Ser
100 105 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
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Val Ala Pro Gln Ala Ile Ser Ser Val Ser Asn Ile Ser Gly Asn Gly
        35                  40                  45


Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
    50                  55                  60


Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65                  70                  75                  80
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Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
                85                  90                  95

Lys Ile Ser Asn Glu Ile Val Ile Val Ala Thr Pro Asp Gly Gly Ser
            100                 105                 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Ile Gly Asp His Glu Val
        115                 120                 125

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Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
    50                  55                  60

Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe Lys
65                  70                  75                  80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
                85                  90                  95

Lys Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Gly Asp Gly Gly Ser
            100                 105                 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
        115                 120                 125

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35 40 45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
50 55 60

Asn Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe Lys
65 70 75 80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
85 90 95

Ser Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Pro Asp Gly Gly Ser
100 105 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
115 120 125

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Val Ala Pro Gln Ala Ile Ser Ser Val Glu Asn Ile Glu Gly Asn Gly
        35                  40                  45


Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
    50                  55                  60


Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe Lys
65                  70                  75                  80
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Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
                85                  90                  95

Lys Ile Ser Asn Glu Ile Val Ile Val Ala Thr Gly Asp Gly Gly Ser
            100                 105                 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
        115                 120                 125

Lys Ala Glu Gln Val Lys Ala Ser Lys Glu Met Gly Glu Thr Leu Leu
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Arg Ala Val Glu Ser Tyr Leu Lys Gly His Pro Asp Ala Tyr Asn
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35 40 45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
50 55 60

Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65 70 75 80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
85 90 95

Lys Ile Ser Asn Glu Ile Val Ile Val Ala Thr Gly Asp Gly Gly Ser
100 105 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
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35 40 45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
50 55 60

Asn Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65 70 75 80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
85 90 95

Ser Ile Ser Asn Glu Ile Val Ile Val Ala Thr Gly Asp Gly Gly Ser
100 105 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
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Val Ala Pro Gln Ala Ile Ser Ser Val Ser Asn Ile Ser Gly Asn Gly
        35                  40                  45


Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
    50                  55                  60
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Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65                  70                  75                  80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
                85                  90                  95

Lys Ile Ser Asn Glu Ile Val Ile Val Ala Thr Pro Asp Gly Gly Ser
            100                 105                 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Ile Gly Asp His Glu Val
        115                 120                 125

Lys Ala Glu Gln Val Glu Ala Ser Lys Glu Met Gly Glu Thr Leu Leu
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Arg Ala Val Glu Ser Tyr Leu Leu Ala His Ser His Ala Tyr Asn Asn
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Val Ala Pro Gln Ala Ile Ser Ser Val Glu Asn Ile Glu Gly Asn Gly
        35                  40                  45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
    50                  55                  60

Asn Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe Lys
65                  70                  75                  80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
                85                  90                  95

Ser Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Gly Asn Gly Gly Ser
            100                 105                 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Tyr His Ser Val
        115                 120                 125
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Val Ala Pro Gln Ala Ile Ser Ser Val Ser Asn Ile Ser Gly Asn Gly
        35                  40                  45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
    50                  55                  60

Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65                  70                  75                  80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
                85                  90                  95

Lys Ile Ser Asn Glu Ile Val Ile Val Ala Thr Gly Asp Gly Gly Ser
            100                 105                 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Ile Gly Asp His Glu Val
        115                 120                 125

Lys Ala Glu Gln Val Glu Ala Ser Lys Glu Met Gly Glu Thr Leu Leu
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35 40 45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
50 55 60

Asn Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65 70 75 80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
85 90 95

Ser Ile Ser Asn Glu Ile Val Ile Val Ala Thr Pro Asp Gly Gly Ser
100 105 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Ile Gly Asp His Glu Val
115 120 125

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Val Ala Pro Gln Ala Ile Ser Ser Val Ser Asn Ile Ser Gly Asn Gly
35 40 45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
50 55 60

Asn Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Lys Phe Lys
65 70 75 80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
85 90 95

Ser Ile Ser Asn Glu Ile Val Ile Val Ala Thr Gly Asp Gly Gly Ser
100 105 110

Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Ile Gly Asp His Glu Val
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Lys Ala Glu Gln Val Glu Ala Ser Lys Glu Met Gly Glu Thr Leu Leu
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cga caa atg cga act gtc act acc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca gaa ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
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65                  70                  75                  80

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                85                  90                  95

gtt gca cag gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt      336
Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc cag aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

gaa gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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<210> 14
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<213> Dermatophagoides pteronyssinus

<400> 14

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Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45
```

```
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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<210> 15
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act aac gcc tgc agt atc aat gga aat gct cca gct gaa atc gat ttg       48
Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

cga caa atg cga act gtc act acc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca cag ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95
```

```
gtt gca gaa gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt      336
Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc gaa aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

cag gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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<210> 16
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<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 16

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Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60
```

```
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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act aac gcc tgc agt atc aat gga aat gct cca gct gaa atc gat ttg       48
Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

cga caa atg gaa act gtc act ccc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Glu Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca cag ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca cag gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt      336
Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110
```

```
atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc gaa aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

cag gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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<210> 18
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<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 18

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Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

Arg Gln Met Glu Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
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```
                85                  90                  95

Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220


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act aac gcc tgc agt atc aat gga aat gct cca gct gaa atc gat ttg       48
Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

cga caa atg cag act gtc act ccc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Gln Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca gaa ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca gaa gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt      336
Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
```

```
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc cag aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

cag gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220


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<213>  Dermatophagoides pteronyssinus

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Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15


Arg Gln Met Gln Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30


Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45


Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60


Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
65                  70                  75                  80


Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95


Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110
```

```
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
```

<210> 21
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Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

cga caa atg cga act gtc act acc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct aac caa cac ggt tgt cat ggt gat acc att cca cgt ggt att      240
Cys Ala Asn Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca gaa gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt      336
Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc cag aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
```

```
145                 150                 155                 160

cag gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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<210> 22
<211> 222
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 22

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Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Asn Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125
```

```
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
```

<210> 23
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<212> DNA
<213> Dermatophagoides pteronyssinus

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act aac gcc tgc agt atc aat gga aat gct cca gct gaa atc gat ttg       48
Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

cga caa atg gaa act gtc act ccc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Glu Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct aac caa cac ggt tgt cat ggt gat acc att cca cgt ggt att      240
Cys Ala Asn Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca gaa gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt      336
Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc cag aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

gaa gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175
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tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
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Arg Gln Met Glu Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Asn Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140
```

```
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
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Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
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cga caa atg cag act gtc act ccc att cgt atg caa gga ggc tgt ggt 96
Arg Gln Met Gln Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
20 25 30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg 144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
35 40 45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat 192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
50 55 60

tgt gct aac caa cac ggt tgt cat ggt gat acc att cca cgt ggt att 240
Cys Ala Asn Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65 70 75 80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac 288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
85 90 95

gtt gca cag gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt 336
Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
100 105 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt 384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
115 120 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc 432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
130 135 140

aaa gat tta gac gca ttc cgt cat tat gat ggc gaa aca atc att caa 480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145 150 155 160

gaa gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt 528
Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
165 170 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg 576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
180 185 190

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gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc             666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Asn Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
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                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220


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1               5                   10                  15

cga caa atg cga act gtc act acc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca gaa ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca cag gaa caa tca tgc cga cga cca aat gca gat cgt ttc ggt      336
Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att gaa      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Glu
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc cag aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
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```
145                 150                 155                 160

gaa gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220


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<400>  28

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1               5                   10                  15


Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30


Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45


Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60


Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
65                  70                  75                  80


Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95


Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
            100                 105                 110


Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Glu
        115                 120                 125
```

```
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220


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1               5                   10                  15

cga caa atg cga act gtc act acc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca cag ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca gaa gaa caa tca tgc cga cga cca aat gca gat cgt ttc ggt      336
Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
            100                 105                 110
```

```
atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cag      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Gln
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc gaa aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

cag gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
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```
                85                  90                  95

Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Gln
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220


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1               5                   10                  15

cga caa atg cga act gtc act acc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
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Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca gaa ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca cag gaa caa tca tgc cga cga cca aat gca gat cgt ttc ggt      336
Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att gaa      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Glu
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc cag aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

gaa gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt ttt      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Phe
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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1               5                   10                  15

Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30
```

```
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Glu Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

Val Ala Gln Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Glu
        115                 120                 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Gln Thr Ile Ile Gln
145                 150                 155                 160

Glu Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Phe
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
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1               5                   10                  15

cga caa atg cga act gtc act acc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct gtg cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca cag ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca gaa gaa caa tca tgc cga cga cca aat gca gat cgt ttc ggt      336
Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cag      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Gln
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc gaa aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145                 150                 155                 160

cag gat aat ggt tac caa acc aac tat cac gct gtc aac att gtt ggt      528
Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt ttt      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Phe
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
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<210> 34
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<400> 34

Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Ser Ile Asp Leu
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Arg Gln Met Arg Thr Val Thr Thr Ile Arg Met Gln Gly Gly Cys Gly
20 25 30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
35 40 45

Ala Val Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
50 55 60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Gln Gly Ile
65 70 75 80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
85 90 95

Val Ala Glu Glu Gln Ser Cys Arg Arg Pro Asn Ala Asp Arg Phe Gly
100 105 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Gln
115 120 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
130 135 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Glu Thr Ile Ile Gln
145 150 155 160

Gln Asp Asn Gly Tyr Gln Thr Asn Tyr His Ala Val Asn Ile Val Gly
165 170 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Phe
180 185 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
195 200 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
210 215 220

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Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att ggc cgt ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc cat tat atg aac tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cgc      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
        115                 120                 125

gat                                                                 387
Asp
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<210> 36
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<400> 36

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Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45
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```
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
        115                 120                 125

Asp
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Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                  10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att ggc cgt ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc cat tat atg aac tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aaa tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
Asp
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<210> 38

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<400> 38

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65 70 75 80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
115 120 125

Asp

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gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                  10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att ggc cgt ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta gaa gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc cat tat atg aac tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
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Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
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Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

Asp
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gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt 48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1 5 10 15

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ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att ggc cgt ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca aaa      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Lys
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc cat tat atg aac tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
Asp
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1               5                   10                  15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Lys
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
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65 70 75 80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
115 120 125

Asp

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gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15

ttg gta cca gga tgc cat ggt tca gaa cca tgt atc att ggc cgt ggt       96
Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc cat tat atg aac tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
Asp
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<210> 44
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1               5                  10                  15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

Asp
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Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1               5                   10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att ggc cgt ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc cat tat atg aac tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110
```

```
gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
Asp
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Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1               5                   10                  15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile Gly Arg Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Asn Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

Asp
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<222> (244)..(246)
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<222> (298)..(300)
<223>

<400> 47

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gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att cat agc ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
```

```
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc aac tat atg aaa tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cgc      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
        115                 120                 125

gat                                                                 387
Asp
```

<210> 48
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 48

```
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95
```

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 49
<211> 387
<212> DNA
<213> Dermatophagoides pteronyssinus

<220>
<221> CDS
<222> (1)..(387)
<223>

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<222> (244)..(246)
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<220>
<221> mutation
<222> (382)..(384)
<223>

<400> 49
gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt 48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1 5 10 15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att cat agc ggt 96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
20 25 30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg 144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
35 40 45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat 192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
50 55 60

gtt ccc ggt atc gat cca aat gca tgc aac tat atg aaa tgt cca ttg 240
Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65 70 75 80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa 288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

att gca cca aaa tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt 336
Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
100 105 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag 384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
115 120 125

gat 387
Asp

<210> 50
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 50

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
20 25 30

```
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

Asp
```

<210> 51
<211> 387
<212> DNA
<213> Dermatophagoides pteronyssinus

<220>
<221> CDS
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<222> (142)..(144)
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<222> (220)..(222)
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<221> mutation
<222> (244)..(246)
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<223>

<220>
<221> mutation
<222> (382)..(384)
<223>

<400> 51

```
gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                  10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att cat agc ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta gaa gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc aac tat atg aaa tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
```

Asp

<210> 52
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 52

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65 70 75 80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
115 120 125

Asp

<210> 53
<211> 387
<212> DNA
<213> Dermatophagoides pteronyssinus

<220>
<221> CDS
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<223>

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<222> (244)..(246)
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<221> mutation
<222> (298)..(300)
<223>

<220>
<221> mutation
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<223>

<220>
<221> mutation
<222> (184)..(186)
<223>

<400> 53

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gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                  10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att cat agc ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta gaa gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60
```

```
gtt ccc ggt atc gat cca aat gca tgc aac tat atg aaa tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
Asp
```

<210> 54
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 54

```
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
```

115 120 125

Asp

<210> 55
<211> 387
<212> DNA
<213> Dermatophagoides pteronyssinus

<220>
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<222> (1)..(387)
<223>

<220>
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<222> (43)..(45)
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<222> (91)..(93)
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<222> (142)..(144)
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<222> (184)..(186)
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<222> (220)..(222)
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<222> (244)..(246)
<223>

<220>
<221> mutation
<222> (298)..(300)
<223>

<220>
<221> mutation
<222> (382)..(384)
<223>

<400> 55

```
gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa gaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15

ttg gta cca gga tgc cat ggt tca gaa cca tgt atc att cat agc ggt       96
Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc aac tat atg aaa tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
Asp
```

<210> 56
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 56

```
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Glu Val
1               5                   10                  15


Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30


Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45
```

```
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

Asp
```

<210> 57
<211> 387
<212> DNA
<213> Dermatophagoides pteronyssinus

<220>
<221> CDS
<222> (1)..(387)
<223>

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<222> (91)..(91)
<223>

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<222> (142)..(144)
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<222> (184)..(186)
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<223>

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<222> (244)..(246)
<223>

<220>
<221> mutation
<222> (298)..(300)
<223>

<220>
<221> mutation
<222> (382)..(384)
<223>

<400> 57

```
gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa aaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1               5                   10                  15

ttg gta cca gga tgc cat ggt aac gaa cca tgt atc att cat agc ggt       96
Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gct tta ttc gaa gcc aat caa aac tca gcg      144
Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
        35                  40                  45

aca gct aaa att gaa atc aaa gct tca atc gat ggt tta agc gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc aac tat atg aaa tgt cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

gtt aac gga caa caa tat gat att aaa tat aca tgg aat gtt cca aaa      288
Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

att gca cca aac tct gaa aat gtt gtc gtc act gtt aaa gtt ttg ggt      336
Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
            100                 105                 110

gat aat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cag      384
Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
        115                 120                 125

gat                                                                 387
Asp
```

<210> 58
<211> 129

<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 58

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Asn Glu Pro Cys Ile Ile His Ser Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Ala
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Ser Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys Asn Tyr Met Lys Cys Pro Leu
65 70 75 80

Val Asn Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Asn Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Gln
115 120 125

Asp

<210> 59
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
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<222> (133)..(135)
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<222> (760)..(762)
<223>

<400> 59

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gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                  10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125
```

```
gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac      672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 60
<211> 287
<212> PRT
<213> Phleum pratense

<400> 60

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
```

35 40 45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
50 55 60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
180 185 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
195 200 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
210 215 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225 230 235 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
245 250 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
260 265 270

```
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285


<210>  61
<211>  861
<212>  DNA
<213>  Phleum pratense

<220>
<221>  CDS
<222>  (1)..(861)
<223>

<220>
<221>  mutation
<222>  (196)..(198)
<223>

<220>
<221>  mutation
<222>  (397)..(399)
<223>

<220>
<221>  mutation
<222>  (562)..(564)
<223>

<220>
<221>  mutation
<222>  (664)..(666)
<223>

<220>
<221>  mutation
<222>  (727)..(729)
<223>

<220>
<221>  mutation
<222>  (760)..(762)
<223>

<400>  61
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag atc aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
```

```
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac aac acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Asn Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac      672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270
```

```
gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 62
<211> 287
<212> PRT
<213> Phleum pratense

<400> 62

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

Tyr Asn Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175
```

```
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 63
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (406)..(408)
<223>

<220>
<221> mutation
<222> (562)..(564)
<223>

<220>
<221> mutation
<222> (664)..(666)
<223>

<220>
<221> mutation
<222> (726)..(728)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 63

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc gag gcg ctc agc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Glu Ala Leu Ser Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag      576
```

```
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac      672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 64
<211> 287
<212> PRT
<213> Phleum pratense

<400> 64

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95
```

```
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

Ala Thr Val Ser Glu Ala Leu Ser Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 65
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS

<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (409)..(411)
<223>

<220>
<221> mutation
<222> (562)..(564)
<223>

<220>
<221> mutation
<222> (664)..(666)
<223>

<220>
<221> mutation
<222> (726)..(728)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 65

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95
```

```
aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc gag gcg ctc cgc aaa atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Glu Ala Leu Arg Lys Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac      672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 66
<211> 287
<212> PRT
<213> Phleum pratense

<400> 66

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                  10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

Ala Thr Val Ser Glu Ala Leu Arg Lys Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
```

225 230 235 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
245 250 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
260 265 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
275 280 285

<210> 67
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (559)..(561)
<223>

<220>
<221> mutation
<222> (664)..(666)
<223>

<220>
<221> mutation
<222> (726)..(728)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 67
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc 48

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                  10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt      96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc     144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag     192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc     240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc     288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac     336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc     384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc     432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc     480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc     528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac cat aag ttc acc gtc ttc gag     576
Thr Ala Ala Asn Ala Ala Pro Ala Asn His Lys Phe Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag     624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac     672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag     720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
```

```
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 68
<211> 287
<212> PRT
<213> Phleum pratense

<400> 68

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140
```

```
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn His Lys Phe Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 69
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (664)..(666)
<223>

<220>
<221> mutation
<222> (694)..(696)
<223>

<220>
<221> mutation
<222> (726)..(728)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 69

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140
```

```
cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag ttc acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac      672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ggc gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Gly Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 70
<211> 287
<212> PRT
<213> Phleum pratense

<400> 70

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
```

50 55 60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu
180 185 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
195 200 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
210 215 220

Ala Ala Thr Val Ala Thr Ala Gly Glu Val Lys Tyr Thr Val Phe Glu
225 230 235 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
245 250 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
260 265 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
275 280 285

<210> 71
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (562)..(564)
<223>

<220>
<221> mutation
<222> (640)..(642)
<223>

<220>
<221> mutation
<222> (726)..(728)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 71

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
```

```
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ggc gcc ctg gag gcc gcc gtc aag cag gcc tac      672
Ser Tyr Lys Phe Ile Gly Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 72
<211> 287
<212> PRT
<213> Phleum pratense

<400> 72

Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1 5 10 15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
20 25 30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
35 40 45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
50 55 60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
180 185 190

```
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Gly Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 73
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (562)..(564)
<223>

<220>
<221> mutation
<222> (631)..(633)
<223>

<220>
<221> mutation
<222> (730)..(732)

<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 73
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc 48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1 5 10 15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt 96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
20 25 30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc 144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
35 40 45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag 192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
50 55 60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc 240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc 288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac 336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc 384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc 432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc 480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc 528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag 576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
180 185 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag 624

```
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aac ttc atc ccc gcc ctg gag gcc gcc gtc aag cag gcc tac      672
Ser Tyr Asn Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 74
<211> 287
<212> PRT
<213> Phleum pratense

<400> 74

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110
```

```
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Asn Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 75
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>

<221> mutation
<222> (196)..(198)
<223>

<220>
<221> mutation
<222> (406)..(408)
<223>

<220>
<221> mutation
<222> (562)..(564)
<223>

<220>
<221> mutation
<222> (664)..(666)
<223>

<220>
<221> mutation
<222> (730)..(732)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 75

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag atc aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac aac acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Asn Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110
```

```
aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc gag gcg ctc agc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Glu Ala Leu Ser Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac      672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 76
<211> 287
<212> PRT
<213> Phleum pratense

<400> 76

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15
```

```
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

Tyr Asn Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

Ala Thr Val Ser Glu Ala Leu Ser Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
```

```
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285


<210>  77
<211>  861
<212>  DNA
<213>  Phleum pratense

<220>
<221>  CDS
<222>  (1)..(861)
<223>

<220>
<221>  mutation
<222>  (196)..(198)
<223>

<220>
<221>  mutation
<222>  (409)..(411)
<223>

<220>
<221>  mutation
<222>  (562)..(564)
<223>

<220>
<221>  mutation
<222>  (664)..(666)
<223>

<220>
<221>  mutation
<222>  (730)..(732)
<223>

<220>
<221>  mutation
<222>  (760)..(762)
<223>

<400>  77
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
```

```
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag atc aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac aac acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Asn Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc gag gcg ctc cgc aaa atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Glu Ala Leu Arg Lys Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag att acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ccc gcc ctg gag gcc gcc gtc aag aaa gcc tac      672
Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
```

```
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285


<210>  78
<211>  287
<212>  PRT
<213>  Phleum pratense

<400>  78

Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15


Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30


Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
        35                  40                  45


Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60


Tyr Asn Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80


Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95


Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110


Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125


Ala Thr Val Ser Glu Ala Leu Arg Lys Ile Ala Gly Thr Leu Glu Val
    130                 135                 140


His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160
```

```
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Ile Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Lys Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 79
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (556)..(558)
<223>

<220>
<221> mutation
<222> (640)..(642)
<223>

<220>
<221> mutation
<222> (727)..(729)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 79

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160
```

```
gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac cat aag ttc acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn His Lys Phe Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aag ttc atc ggc gcc ctg gag gcc gcc gtc aag cag gcc tac      672
Ser Tyr Lys Phe Ile Gly Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 80
<211> 287
<212> PRT
<213> Phleum pratense

<400> 80

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                  10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
```

65 70 75 80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn His Lys Phe Thr Val Phe Glu
180 185 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
195 200 205

Ser Tyr Lys Phe Ile Gly Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
210 215 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225 230 235 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
245 250 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
260 265 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
275 280 285

<210> 81
<211> 861

<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (556)..(558)
<223>

<220>
<221> mutation
<222> (631)..(633)
<223>

<220>
<221> mutation
<222> (727)..(729)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 81

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
```

```
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac cat aag ttc acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn His Lys Phe Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aac ttc atc ccc gcc ctg gag gcc gcc gtc aag cag gcc tac      672
Ser Tyr Asn Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ccg gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 82
<211> 287

<212> PRT
<213> Phleum pratense

<400> 82

Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1 5 10 15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
20 25 30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
35 40 45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
50 55 60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn His Lys Phe Thr Val Phe Glu
180 185 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
195 200 205

```
Ser Tyr Asn Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 83
<211> 861
<212> DNA
<213> Phleum pratense

<220>
<221> CDS
<222> (1)..(861)
<223>

<220>
<221> mutation
<222> (133)..(135)
<223>

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (640)..(642)
<223>

<220>
<221> mutation
<222> (694)..(696)
<223>

<220>
<221> mutation
<222> (727)..(729)
<223>

<220>
<221> mutation

<222> (760)..(762)
<223>

<400> 83
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc 48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1 5 10 15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt 96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
20 25 30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc 144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
35 40 45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag 192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
50 55 60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc 240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc 288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac 336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc 384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc 432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc 480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc 528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag ttc acc gtc ttc gag 576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu
180 185 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag 624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
195 200 205

agc tac aag ttc atc ggc gcc ctg gag gcc gcc gtc aag cag gcc tac 672

```
Ser Tyr Lys Phe Ile Gly Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ggc gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Gly Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285


<210>  84
<211>  287
<212>  PRT
<213>  Phleum pratense

<400>  84

Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15


Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30


Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45


Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60


Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80


Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95


Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110


Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125
```

```
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu
            180                 185                 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

Ser Tyr Lys Phe Ile Gly Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

Ala Ala Thr Val Ala Thr Ala Gly Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285


<210>  85
<211>  861
<212>  DNA
<213>  Phleum pratense

<220>
<221>  CDS
<222>  (1)..(861)
<223>

<220>
<221>  mutation
<222>  (133)..(135)
<223>
```

<220>
<221> mutation
<222> (397)..(399)
<223>

<220>
<221> mutation
<222> (631)..(633)
<223>

<220>
<221> mutation
<222> (694)..(696)
<223>

<220>
<221> mutation
<222> (727)..(729)
<223>

<220>
<221> mutation
<222> (760)..(762)
<223>

<400> 85

```
gcc gat ctc ggt tac ggc ccc gcc acc cca gct gcc ccg gcc gcc ggc       48
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

tac acc ccc gcc acc ccc gcc gcc ccg gcc gga gcg gag cca gca ggt       96
Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30

aag gcg acg acc gag gag cag aag ctg atc gag aag aaa aac gcc ggc      144
Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
        35                  40                  45

ttc aag gcg gcc ttg gcc gct gcc gcc ggc gtc ccg cca gcg gac aag      192
Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
    50                  55                  60

tac agg acg ttc gtc gca acc ttc ggc gcg gcc tcc aac aag gcc ttc      240
Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65                  70                  75                  80

gcg gag ggc ctc tcg ggc gag ccc aag ggc gcc gcc gaa tcc agc tcc      288
Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
                85                  90                  95

aag gcc gcg ctc acc tcc aag ctc gac gcc gcc tac aag ctc gcc tac      336
Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
            100                 105                 110

aag aca gcc gag ggc gcg acg cct gag gcc aag tac gac gcc tac gtc      384
Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
        115                 120                 125
```

```
gcc acc gta agc agc gcg ctc cgc atc atc gcc ggc acc ctc gag gtc      432
Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
    130                 135                 140

cac gcc gtc aag ccc gcg gcc gag gag gtc aag gtc atc ccc gcc ggc      480
His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145                 150                 155                 160

gag ctg cag gtc atc gag aag gtc gac gcc gcc ttc aag gtc gct gcc      528
Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
                165                 170                 175

acc gcc gcc aac gcc gcc ccc gcc aac gac aag ttc acc gtc ttc gag      576
Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu
            180                 185                 190

gcc gcc ttc aac gac gcc atc aag gcg agc acg ggc ggc gcc tac gag      624
Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
        195                 200                 205

agc tac aac ttc atc ccc gcc ctg gag gcc gcc gtc aag cag gcc tac      672
Ser Tyr Asn Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
    210                 215                 220

gcc gcc acc gtc gcc acc gcg ggc gag gtc aag tac act gtc ttt gag      720
Ala Ala Thr Val Ala Thr Ala Gly Glu Val Lys Tyr Thr Val Phe Glu
225                 230                 235                 240

acc gca gaa aaa aag gcc atc acc gcc atg tcc gaa gca aaa aag gct      768
Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
                245                 250                 255

gcc aag ccc gcc gcc gct gcc acc gcc acc gca acc gcc gcc gtt ggc      816
Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
            260                 265                 270

gcg gcc acc ggc gcc gcc acc gcc gct act ggt ggc tac aaa gtc          861
Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285
```

<210> 86
<211> 287
<212> PRT
<213> Phleum pratense

<400> 86

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
            20                  25                  30
```

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Lys Asn Ala Gly
35 40 45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
50 55 60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

Ala Thr Val Ser Ser Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu
180 185 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu
195 200 205

Ser Tyr Asn Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
210 215 220

Ala Ala Thr Val Ala Thr Ala Gly Glu Val Lys Tyr Thr Val Phe Glu
225 230 235 240

Thr Ala Glu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Lys Lys Ala
245 250 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly

```
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
        275                 280                 285


<210>  87
<211>  666
<212>  DNA
<213>  Dermatophagoides pteronyssinus

<220>
<221>  CDS
<222>  (1)..(666)
<223>

<400>  87
act aac gcc tgc agt atc aat gga aat gct cca gct gaa atc gat ttg       48
Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

cga caa atg cga act gtc act ccc att cgt atg caa gga ggc tgt ggt       96
Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

tca tgt tgg gct ttc tct ggt gtt gcc gca act gaa tca gct tat ttg      144
Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

gct tac cgt aat caa tca ttg gat ctt gct gaa caa gaa tta gtc gat      192
Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

tgt gct tcc caa cac ggt tgt cat ggt gat acc att cca cgt ggt att      240
Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80

gaa tac atc caa cat aat ggt gtc gtc caa gaa agc tac tat cga tac      288
Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

gtt gca cga gaa caa tca tgc cga cga cca aat gca caa cgt ttc ggt      336
Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

atc tca aac tat tgc caa att tac cca cca aat gta aac aaa att cgt      384
Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125

gaa gct ttg gct caa acc cac agc gct att gcc gtc att att ggc atc      432
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

aaa gat tta gac gca ttc cgt cat tat gat ggc cga aca atc att caa      480
Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile Ile Gln
145                 150                 155                 160
```

```
cgc gat aat ggt tac caa cca aac tat cac gct gtc aac att gtt ggt      528
Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

tac agt aac gca caa ggt gtc gat tat tgg atc gta cga aac agt tgg      576
Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

gat acc aat tgg ggt gat aat ggt tac ggt tat ttt gct gcc aac atc      624
Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

gat ttg atg atg att gaa gaa tat cca tat gtt gtc att ctc              666
Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
```

<210> 88
<211> 222
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 88

```
Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1               5                   10                  15

Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
                85                  90                  95

Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
            100                 105                 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
        115                 120                 125
```

```
Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
    130                 135                 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile Ile Gln
145                 150                 155                 160

Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile Val Gly
                165                 170                 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
            180                 185                 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
        195                 200                 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
    210                 215                 220
```

<210> 89
<211> 387
<212> DNA
<213> Dermatophagoides pteronyssinus

<220>
<221> CDS
<222> (1)..(387)
<223>

<400> 89

```
gat caa gtc gat gtc aaa gat tgt gcc aat cat gaa atc aaa aaa gtt       48
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1               5                   10                  15

ttg gta cca gga tgc cat ggt tca gaa cca tgt atc att cat cgt ggt       96
Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
            20                  25                  30

aaa cca ttc caa ttg gaa gcc gtt ttc gaa gcc aac caa aac aca aaa      144
Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Thr Lys
        35                  40                  45

acc gct aaa att gaa atc aaa gcc tca atc gat ggt tta gaa gtt gat      192
Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60

gtt ccc ggt atc gat cca aat gca tgc cat tac atg aaa tgc cca ttg      240
Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

gtt aaa gga caa caa tat gat att aaa tat aca tgg aat gtt ccg aaa      288
Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
```

```
                85                  90                  95

att gca cca aaa tct gaa aat gtt gtc gtc act gtt aaa gtt atg ggt      336
Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly
            100                 105                 110

gat gat ggt gtt ttg gcc tgt gct att gct act cat gct aaa atc cgc      384
Asp Asp Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
        115                 120                 125

gat                                                                  387
Asp
```

<210> 90
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 90

```
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1               5                   10                  15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Thr Lys
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu
65                  70                  75                  80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
                85                  90                  95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly
            100                 105                 110

Asp Asp Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
        115                 120                 125

Asp
```

<210> 91
<211> 480
<212> DNA
<213> Betula verrucosa

<400> 91
ggtgtgttta attatgagac tgagaccacc tctgttatcc cagcagctcg actgttcaag 60

gcctttatcc ttgatggcga taacctcttt ccaaaggttg caccccaagc cattagcagt 120

gttgaaaaca ttgaaggaaa tggagggcct ggaaccatta agaagatcag ctttcccgaa 180

ggcctccctt tcaagtacgt gaaggacaga gttgatgagg tggaccacac aaacttcaaa 240

tacaattaca gcgtgatcga gggcggtccc ataggcgaca cattggagaa gatctccaac 300

gagataaaga tagtggcaac ccctgatgga ggatccatct tgaagatcag caacaagtac 360

cacaccaaag gtgaccatga ggtgaaggca gagcaggtta aggcaagtaa agaaatgggc 420

gagacacttt tgagggccgt tgagagctac ctcttggcac actccgatgc ctacaactaa 480

<210> 92
<211> 159
<212> PRT
<213> Betula verrucosa

<400> 92

Gly Val Phe Asn Tyr Glu Thr Glu Thr Thr Ser Val Ile Pro Ala Ala
1 5 10 15

Arg Leu Phe Lys Ala Phe Ile Leu Asp Gly Asp Asn Leu Phe Pro Lys
20 25 30

Val Ala Pro Gln Ala Ile Ser Ser Val Glu Asn Ile Glu Gly Asn Gly
35 40 45

Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Leu Pro Phe
50 55 60

Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe Lys
65 70 75 80

Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu
85 90 95

Lys Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Pro Asp Gly Gly Ser
100 105 110

```
Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu Val
        115                 120                 125

Lys Ala Glu Gln Val Lys Ala Ser Lys Glu Met Gly Glu Thr Leu Leu
    130                 135                 140

Arg Ala Val Glu Ser Tyr Leu Leu Ala His Ser Asp Ala Tyr Asn
145                 150                 155
```

<210> 93
<211> 387
<212> DNA
<213> Dermatophagoides pteronyssinus

<400> 93
gatcaagtcg atgtcaaaga ttgtgccaat catgaaatca aaaaagtttt ggtaccagga 60

tgccatggtt cagaaccatg tatcattcat cgtggtaaac cattccaatt ggaagcttta 120

ttcgaagcca atcaaaactc aaaaacagct aaaattgaaa tcaaagcttc aatcgatggt 180

ttagaagttg atgttcccgg tatcgatcca aatgcatgcc attatatgaa atgtccattg 240

gttaaaggac aacaatatga tattaaatat acatggaatg ttccaaaaat tgcaccaaaa 300

tctgaaaatg ttgtcgtcac tgttaaagtt ttgggtgata atggtgtttt ggcctgtgct 360

attgctactc atgctaaaat ccgcgat 387

<210> 94
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 94

```
Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1               5                   10                  15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
            20                  25                  30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Lys
        35                  40                  45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
    50                  55                  60
```

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Leu Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 95
<211> 861
<212> DNA
<213> Phleum pratense

<400> 95
gccgatctcg gttacggccc cgccacccca gctgccccgg ccgccggcta cacccccgcc 60

acccccgccg ccccggccgg agcggagcca gcaggtaagg cgacgaccga ggagcagaag 120

ctgatcgaga agatcaacgc cggcttcaag gcggccttgg ccgctgccgc cggcgtcccg 180

ccagcggaca agtacaggac gttcgtcgca accttcggcg cggcctccaa caaggccttc 240

gcggagggcc tctcgggcga gcccaagggc gccgccgaat ccagctccaa ggccgcgctc 300

acctccaagc tcgacgccgc ctacaagctc gcctacaaga cagccgaggg cgcgacgcct 360

gaggccaagt acgacgccta cgtcgccacc gtaagcgagg cgctccgcat catcgccggc 420

accctcgagg tccacgccgt caagcccgcg gccgaggagg tcaaggtcat ccccgccggc 480

gagctgcagg tcatcgagaa ggtcgacgcc gccttcaagg tcgctgccac cgccgccaac 540

gccgcccccg ccaacgacaa gttcaccgtc ttcgaggccg ccttcaacga cgccatcaag 600

gcgagcacgg gcggcgccta cgagagctac aagttcatcc ccgccctgga ggccgccgtc 660

aagcaggcct acgccgccac cgtcgccacc gcgccggagg tcaagtacac tgtctttgag 720

accgcactga aaaaggccat caccgccatg tccgaagcac agaaggctgc caagcccgcc 780

gccgctgcca ccgccaccgc aaccgccgcc gttggcgcgg ccaccggcgc cgccaccgcc 840

gctactggtg gctacaaagt c 861

<210> 96
<211> 287
<212> PRT
<213> Phleum pratense

<400> 96

Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1 5 10 15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Glu Pro Ala Gly
20 25 30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
35 40 45

Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val Pro Pro Ala Asp Lys
50 55 60

Tyr Arg Thr Phe Val Ala Thr Phe Gly Ala Ala Ser Asn Lys Ala Phe
65 70 75 80

Ala Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser
85 90 95

Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr
100 105 110

Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val
115 120 125

Ala Thr Val Ser Glu Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val
130 135 140

His Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly
145 150 155 160

Glu Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala
165 170 175

Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu
180 185 190

Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu

195 200 205

Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr
210 215 220

Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu
225 230 235 240

Thr Ala Leu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Gln Lys Ala
245 250 255

Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly
260 265 270

Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
275 280 285

<210> 97
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 97
aattatgaga ctgagaccac ctctgttatc ccagcagctc g 41

<210> 98
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 98
cgagctgctg ggataacaga ggtggtctca gtctcataat t 41

<210> 99
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 99
tgagaccccc tctgttatcc cag 23

<210> 100
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 100
acagaggggg tctcagtctc ata 23

<210> 101
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 101
gttgccaacg atcag 15

<210> 102
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 102
gataccctct ttccacaggt tgcaccccaa g 31

<210> 103
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 103
acctgtggaa agagggtatc gccatcaagg a 31

<210> 104
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 104
aacatttcag gaaatggagg gcc 23

<210> 105
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 105
tttcctgaaa tgttttcaac act 23

<210> 106
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 106
ttaagaacat cagctttccc gaa 23

<210> 107
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 107
agctgatgtt cttaatggtt cca 23

<210> 108
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 108
ggaccatgca aacttcaaat aca 23

<210> 109
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 109
agtttgcatg gtccacctca tca 23

<210> 110
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 110
tttccctcag gcctccctttt caa 23

<210> 111
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 111
aggcctgagg gaaagctgat ctt 23

<210> 112
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 112
tgaaggatct ggagggcctg gaac 24

<210> 113
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 113
ccctccagat ccttcaatgt tttc 24

<210> 114

<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 114
ggcaactggt gatggaggat ccat 24

<210> 115
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 115
ccatcaccag ttgccactat cttt 24

<210> 116
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 116
catgccatcc gtaag 15

<210> 117
<211> 202
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(202)
<223> where X is any amino acid

<400> 117

Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala
1 5 10 15

Cys Lys Tyr Gly Ser Leu Lys Pro Asn Cys Gly Asn Lys Val Val Val
20 25 30

Ser Tyr Gly Leu Thr Lys Gln Glu Lys Gln Asp Ile Leu Lys Glu His

35 40 45

Asn Asp Phe Arg Xaa Xaa Ala Arg Gly Leu Glu Thr Arg Gly Asn Pro
50 55 60

Gly Pro Gln Pro Pro Ala Lys Asn Met Lys Asn Leu Val Trp Asn Asp
65 70 75 80

Glu Leu Ala Tyr Val Ala Gln Val Trp Ala Asn Gln Cys Gln Tyr Gly
85 90 95

His Asp Thr Cys Arg Asp Val Ala Lys Tyr Gln Val Gly Gln Asn Val
100 105 110

Ala Leu Thr Gly Ser Thr Ala Ala Lys Tyr Asp Asp Pro Xaa Xaa Leu
115 120 125

Val Lys Met Trp Glu Asp Glu Val Lys Asp Tyr Asn Pro Lys Lys Lys
130 135 140

Phe Ser Gly Asn Asp Phe Leu Lys Thr Gly His Tyr Thr Gln Met Val
145 150 155 160

Trp Ala Asn Thr Lys Glu Val Gly Cys Gly Ser Ile Lys Tyr Ile Gln
165 170 175

Glu Lys Trp His Lys His Tyr Leu Val Cys Asn Tyr Gly Pro Ser Gly
180 185 190

Asn Phe Asn Glu Glu Leu Xaa Xaa Thr Lys
195 200

<210> 118
<211> 203
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(203)
<223> where X is any amino acid

<400> 118

Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala

```
1               5                   10                  15

Cys Lys Tyr Gly Ser Leu Lys Pro Asn Cys Gly Asn Lys Val Val Val
            20                  25                  30

Ser Tyr Gly Leu Thr Lys Gln Glu Lys Gln Asp Ile Leu Lys Glu His
        35                  40                  45

Asn Asp Phe Arg Xaa Xaa Ala Arg Gly Leu Glu Thr Arg Gly Asn Pro
    50                  55                  60

Gly Pro Gln Pro Pro Ala Lys Asn Met Lys Asn Leu Val Trp Asn Asp
65                  70                  75                  80

Glu Leu Ala Tyr Val Ala Gln Val Trp Ala Asn Gln Cys Gln Tyr Gly
                85                  90                  95

His Asp Thr Cys Arg Asp Val Ala Lys Tyr Gln Val Gly Gln Asn Val
            100                 105                 110

Ala Leu Thr Gly Ser Thr Ala Ala Lys Tyr Asp Asp Pro Xaa Xaa Leu
        115                 120                 125

Val Lys Met Trp Glu Asp Glu Val Lys Asp Tyr Asn Pro Lys Lys Lys
    130                 135                 140

Phe Ser Gly Asn Asp Phe Leu Lys Thr Gly His Tyr Thr Gln Met Val
145                 150                 155                 160

Trp Ala Asn Thr Lys Glu Val Gly Cys Gly Ser Ile Lys Tyr Ile Gln
                165                 170                 175

Glu Lys Trp His Lys His Tyr Leu Val Cys Asn Tyr Gly Pro Ser Gly
            180                 185                 190

Asn Phe Lys Asn Glu Glu Leu Xaa Xaa Thr Lys
        195                 200
```

<210> 119
<211> 201
<212> PRT
<213> Vespula

<220>

<221> MISC_FEATURE
<222> (1)..(201)
<223> where X is any amino acid

<400> 119

Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala
1 5 10 15

Cys Lys Tyr Gly Ser Leu Lys Pro Asn Cys Gly Asn Lys Val Val Val
20 25 30

Ser Tyr Gly Leu Thr Lys Gln Glu Lys Gln Asp Ile Leu Lys Glu His
35 40 45

Asn Asp Phe Arg Xaa Xaa Ala Arg Gly Leu Glu Thr Arg Gly Asn Pro
50 55 60

Gly Pro Gln Pro Pro Ala Lys Asn Met Lys Asn Leu Val Trp Asn Asp
65 70 75 80

Glu Leu Ala Tyr Val Ala Gln Val Trp Ala Asn Gln Cys Gln Tyr Gly
85 90 95

His Asp Thr Cys Arg Asp Xaa Ala Lys Tyr Gln Val Gly Gln Asn Val
100 105 110

Ala Leu Thr Gly Ser Thr Ala Ala Lys Tyr Asp Asp Pro Xaa Xaa Leu
115 120 125

Val Lys Met Trp Glu Asp Glu Val Lys Asp Tyr Asn Pro Lys Lys Lys
130 135 140

Phe Ser Gly Asn Phe Leu Lys Thr Gly His Tyr Thr Gln Met Val Trp
145 150 155 160

Ala Asn Thr Lys Glu Val Gly Cys Gly Ser Ile Lys Phe Ile Gln Glu
165 170 175

Lys Trp His Lys His Tyr Leu Val Cys Asn Tyr Gly Pro Ser Gly Asn
180 185 190

Phe Asn Glu Glu Leu Xaa Xaa Thr Lys
195 200

<210> 120
<211> 194
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(194)
<223> where X is any amino acid

<400> 120

Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala
1 5 10 15

Cys Lys Tyr Gly Ser Leu Lys Pro Asn Cys Gly Asn Lys Val Val Ser
20 25 30

Tyr Gly Leu Thr Lys Gln Glu Lys Gln Asp Ile Leu Lys Glu His Asn
35 40 45

Asp Phe Arg Xaa Xaa Ala Arg Gly Leu Glu Thr Arg Gly Asn Pro Gly
50 55 60

Pro Gln Pro Pro Ala Lys Asn Met Lys Asn Leu Val Trp Asp Glu Leu
65 70 75 80

Ala Tyr Xaa Ala Gln Val Trp Ala Asn Gln Cys Gln Tyr Gly His Asp
85 90 95

Thr Cys Arg Asp Val Ala Lys Tyr Gln Val Gly Gln Asn Val Ala Leu
100 105 110

Thr Gly Ser Thr Ala Ala Tyr Asp Pro Xaa Xaa Leu Val Lys Met Trp
115 120 125

Glu Asp Glu Val Lys Asp Tyr Asn Pro Lys Lys Lys Phe Ser Asn Phe
130 135 140

Leu Lys Gly His Tyr Thr Gln Met Val Trp Ala Asn Thr Lys Glu Val
145 150 155 160

Gly Cys Gly Ser Ile Lys Tyr Ile Gln Glu Trp His Lys His Tyr Leu
165 170 175

Val Cys Asn Tyr Gly Pro Ser Gly Asn Phe Asn Glu Glu Leu Xaa Xaa
180 185 190

Thr Lys

<210> 121
<211> 198
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(198)
<223> where X can be any amino acid

<400> 121

Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala
1 5 10 15

Cys Lys Tyr Gly Ser Leu Lys Pro Asn Cys Gly Asn Lys Xaa Val Val
20 25 30

Ser Tyr Gly Leu Thr Lys Glu Lys Gln Asp Ile Leu Lys Glu His Asn
35 40 45

Asp Phe Arg Xaa Xaa Ala Arg Gly Leu Glu Thr Arg Gly Asn Pro Gly
50 55 60

Pro Gln Pro Pro Ala Lys Asn Met Lys Asn Leu Val Trp Asn Asp Glu
65 70 75 80

Leu Ala Tyr Val Ala Gln Val Trp Ala Asn Gln Cys Gln Tyr Gly His
85 90 95

Asp Thr Cys Arg Asp Val Ala Lys Tyr Val Gly Gln Asn Val Ala Leu
100 105 110

Thr Gly Ser Thr Ala Lys Tyr Asp Pro Xaa Xaa Leu Val Lys Met Trp
115 120 125

Glu Asp Glu Val Lys Asp Tyr Asn Pro Lys Lys Lys Phe Ser Gly Asn
130 135 140

```
Asp Phe Leu Lys Thr Gly His Tyr Thr Gln Met Val Trp Ala Asn Thr
145                 150                 155                 160

Lys Glu Val Gly Cys Gly Ser Ile Lys Tyr Ile Gln Glu Lys Trp His
                165                 170                 175

Lys His Tyr Leu Val Cys Asn Tyr Gly Pro Ser Gly Asn Phe Asn Glu
            180                 185                 190

Glu Leu Xaa Xaa Thr Lys
        195
```

<210> 122
<211> 192
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(192)
<223> where X is any amino acid

<400> 122

```
Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala
1               5                   10                  15

Cys Lys Tyr Ser Leu Lys Pro Asn Cys Asn Lys Val Val Tyr Gly Leu
            20                  25                  30

Thr Lys Gln Glu Lys Gln Asp Ile Leu Lys Glu His Asn Asp Phe Arg
        35                  40                  45

Xaa Xaa Ala Arg Gly Leu Glu Thr Arg Gly Asn Pro Gly Pro Gln Pro
    50                  55                  60

Pro Ala Lys Asn Met Lys Asn Leu Val Trp Asp Glu Leu Ala Tyr Thr
65                  70                  75                  80

Ala Gln Val Trp Ala Asn Gln Cys Gln Tyr Gly His Asp Thr Cys Arg
                85                  90                  95

Asp Val Ala Lys Tyr Val Gly Gln Asn Val Ala Leu Thr Gly Ser Thr
            100                 105                 110
```

```
Ala Ala Lys Tyr Asp Pro Xaa Xaa Leu Val Lys Met Trp Glu Asp Glu
        115                 120                 125

Val Lys Asp Tyr Asn Pro Lys Lys Lys Phe Ser Asn Phe Leu Lys Gly
    130                 135                 140

His Tyr Thr Gln Met Val Trp Ala Asn Thr Lys Glu Val Gly Cys Gly
145                 150                 155                 160

Ser Ile Lys Tyr Ile Gln Xaa Lys Trp His Lys His Tyr Leu Val Cys
                165                 170                 175

Asn Tyr Gly Pro Ser Gly Asn Phe Asn Glu Glu Leu Xaa Xaa Thr Lys
            180                 185                 190
```

<210> 123
<211> 170
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(170)
<223> where X is any amino acid

<400> 123

```
Asn Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala Cys
1               5                   10                  15

Lys Tyr Gly Thr Ser Lys Pro Asn Cys Gly Val Val Tyr Gly Leu Thr
            20                  25                  30

Glu Lys Gln Thr Ile Leu Lys His Asn Asp Phe Arg Xaa Xaa Ala Xaa
        35                  40                  45

Gly Leu Glu Thr Arg Gly Asn Pro Gly Pro Gln Pro Pro Ala Lys Asn
    50                  55                  60

Met Asn Leu Val Trp Asn Asp Glu Leu Ala Xaa Ala Gln Val Trp Ala
65                  70                  75                  80

Gln Cys Asn Gln Tyr Gly His Asp Thr Cys Lys Asp Lys Tyr Val Gly
                85                  90                  95
```

Gln Asn Ile Ala Ile Thr Ala Ala Xaa Asp Pro Xaa Xaa Leu Val Lys
100 105 110

Met Trp Glu Glu Val Lys Asp Phe Asn Pro Trp Ser Asn Lys Thr Gly
115 120 125

His Tyr Thr Gln Met Val Trp Ala Thr Lys Glu Thr Gly Cys Gly Ser
130 135 140

Xaa Lys Tyr Val Asp Trp His Tyr Leu Val Cys Asn Tyr Gly Pro Ser
145 150 155 160

Gly Asn Phe Asn Glu Leu Tyr Xaa Thr Lys
165 170

<210> 124
<211> 166
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(166)
<223> where X is any amino acid

<400> 124

Tyr Cys Lys Ile Lys Cys Leu Lys Gly Gly Val His Thr Ala Cys Lys
1 5 10 15

Tyr Gly Thr Ser Lys Pro Asn Cys Gly Asn Val Val Ser Tyr Gly Val
20 25 30

Thr Glu Lys Gln Phe Ile Leu Lys His Asn Asp Phe Arg Xaa Xaa Ala
35 40 45

Arg Gly Leu Glu Thr Arg Gly Asn Pro Gly Pro Gln Pro Pro Ala Lys
50 55 60

Asn Met Asn Leu Val Trp Asn Glu Leu Ala Ile Ala Gln Thr Trp Ala
65 70 75 80

Gln Cys Tyr Gly His Asp Thr Cys Lys Asp Lys Tyr Asn Val Gly Gln
85 90 95

Asn Ile Ala Val Xaa Gly Ser Thr Ala Ala Tyr Thr Leu Val Lys Trp
100 105 110

Glu Glu Val Lys Asp Xaa Asn Pro Trp Gly Asn Xaa Xaa Lys Gly His
115 120 125

Tyr Thr Gln Met Val Trp Ala Thr Lys Glu Ile Gly Cys Gly Ser Ile
130 135 140

Lys Tyr Val Trp His Tyr Leu Val Cys Asn Tyr Gly Pro Gly Asn Phe
145 150 155 160

Asn Glu Val Xaa Xaa Lys
165

<210> 125
<211> 156
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(156)
<223> where X is any amino acid

<400> 125

Asn Asn Tyr Cys Lys Ile Lys Cys Xaa Gly Thr His Thr Cys Lys Tyr
1 5 10 15

Gly Thr Ser Lys Pro Asn Cys Gly Val Val Gly Leu Thr Lys Gln Glu
20 25 30

Phe Ile Leu Lys His Asn Phe Phe Arg Xaa Xaa Ala Arg Gly Leu Glu
35 40 45

Thr Arg Gly Asn Pro Gly Pro Gln Pro Pro Ala Lys Met Leu Val Trp
50 55 60

Asn Asp Glu Leu Ala Ile Ala Gln Val Trp Ala Asn Asn Cys Gln Tyr
65 70 75 80

Gly His Asp Cys Arg Ala Lys Tyr Val Gly Gln Asn Ile Ala Ile Thr
85 90 95

```
Ala Xaa Xaa Xaa Xaa Val Lys Met Trp Glu Asp Glu Val Lys Asp Tyr
            100                 105                 110

Gln Asn Lys Gly His Tyr Thr Gln Met Val Trp Ala Thr Lys Glu Ile
        115                 120                 125

Gly Cys Gly Ser Ile Lys Tyr Ile Trp His Lys His Tyr Leu Val Cys
    130                 135                 140

Asn Tyr Gly Pro Gly Asn Asn Glu Leu Xaa Xaa Lys
145                 150                 155
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<210> 126
<211> 155
<212> PRT
<213> Vespula

<220>
<221> MISC_FEATURE
<222> (1)..(155)
<223> where X is any amino acid

<400> 126

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Asn Asn Tyr Cys Lys Ile Lys Cys Lys Gly Ile His Thr Cys Lys Tyr
1               5                   10                  15

Gly Thr Ser Lys Pro Asn Cys Gly Val Val Gly Leu Thr Lys Gln Glu
            20                  25                  30

Glu Ile Leu Lys His Asn Xaa Phe Arg Xaa Xaa Ala Arg Gly Leu Glu
        35                  40                  45

Thr Arg Gly Asn Pro Gly Pro Gln Pro Pro Ala Lys Met Leu Val Trp
    50                  55                  60

Asn Asp Glu Leu Ala Ile Ala Gln Val Trp Ala Asn Gln Cys Asn Tyr
65                  70                  75                  80

Gly His Asp Cys Arg Ala Lys Tyr Val Gly Gln Asn Ile Ala Thr Ser
                85                  90                  95

Ala Xaa Xaa Xaa Xaa Val Lys Met Trp Glu Asp Glu Val Lys Asp Tyr
            100                 105                 110
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Gln Asn Lys Gly His Tyr Thr Gln Met Val Trp Ala Thr Lys Glu Ile
115 120 125

Gly Cys Gly Ser Tyr Ile Asp Trp His Arg His Tyr Leu Val Cys Asn
130 135 140

Tyr Gly Pro Gly Asn Asn Glu Ile Xaa Xaa Lys
145 150 155

<210> 127
<211> 41
<212> DNA
<213> Vespula vulgaris

<400> 127
accacagcct ccagcgaaga atatgaaaaa tttggtatgg a 41

<210> 128
<211> 41
<212> DNA
<213> Vespula vulgaris

<400> 128
tccataccaa atttttcata ttcttcgctg gaggctgtgg t 41

<210> 129
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Ves v 5 mutant 1 sense primer

<400> 129
ccagcggcta atatgaaaaa t 21

<210> 130
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Ves v 5 mutant 1 non-sense primer

<400> 130
catattcttc gctggaggct g 21

<210> 131

<211> 41
<212> DNA
<213> Vespula vulgaris

<400> 131
ggctaatcaa tgtcaatatg gtcacgatac ttgcagggat g 41

<210> 132
<211> 41
<212> DNA
<213> Vespula vulgaris

<400> 132
catccctgca agtatcgtga ccatattgac attgattagc c 41

<210> 133
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Ves v 5 mutant 2 sense primer

<400> 133
tgtcaatatg gtcacgatac t 21

<210> 134
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Ves v 5 mutant 2 non-sense primer

<400> 134
gtgaccatat tgacattgat t 21

<210> 135
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 135
attcatcagc tgcgagatag g 21

<210> 136
<211> 615
<212> DNA
<213> Vespula vulgaris

<400> 136
aacaattatt gtaaaataaa atgtttgaaa ggaggtgtcc atactgcctg caaatatgga 60

agtcttaaac cgaattgcgg taataaggta gtggtatcct atggtctaac gaaacaagag 120

aaacaagaca tcttaaagga gcacaatgac tttagacaaa aaattgcacg aggattggag 180

actagaggta atcctggacc acagcctcca gcgaagaata tgaaaaattt ggtatggaac 240

gacgagttag cttatgtcgc ccaagtgtgg gctaatcaat gtcaatatgg tcacgatact 300

tgcagggatg tagcaaaata tcaggttgga caaaacgtag ccttaacagg tagcacggct 360

gctaaatacg atgatccagt taaactagtt aaaatgtggg aagatgaagt gaaagattat 420

aatcctaaga aaaagttttc gggaaacgac tttctgaaaa ccggccatta cactcaaatg 480

gtttgggcta acaccaagga agttggttgt ggaagtataa aatacattca agagaaatgg 540

cacaaacatt accttgtatg taattatgga cccagcggaa actttaagaa tgaggaactt 600

tatcaaacaa agtaa 615

<210> 137
<211> 591
<212> DNA
<213> Dermatophagoides pteronyssinus

<400> 137
cacaaattct tctttcttcc ttactactga tcattaatct gaaaacaaaa ccaaacaaac 60

cattcaaaat gatgtacaaa attttgtgtc tttcattgtt ggtcgcagcc gttgctcgtg 120

atcaagtcga tgtcaaagat tgtgccaatc atgaaatcaa aaaagttttg gtaccaggat 180

gccatggttc agaaccatgt atcattcatc gtggtaaacc attccaattg gaagccgttt 240

tcgaagccaa ccaaaacaca aaaacggcta aaattgaaat caaagcctca atcgatggtt 300

tagaagttga tgttcccggt atcgatccaa atgcatgcca ttacatgaaa tgcccattgg 360

ttaaaggaca acaatatgat attaaatata catggaatgt tccgaaaatt gcaccaaaat 420

ctgaaaatgt tgtcgtcact gttaaagtta tgggtgatga tggtgttttg gcctgtgcta 480

ttgctactca tgctaaaatc cgcgattaaa tcaaacaaaa tttattgatt ttgtaatcac 540

aaatgattga ttttctttcc aaaaaaaaaa taaataaaat tttgggaatt c 591

<210> 138
<211> 146
<212> PRT
<213> Dermatophagoides pteronyssinus

<300>
<308> GenBank / P49278
<309> 1996-02-01
<313> (1)..(146)

<400> 138

Met Met Tyr Lys Ile Leu Cys Leu Ser Leu Leu Val Ala Ala Val Ala
1 5 10 15

Arg Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys
20 25 30

Val Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg
35 40 45

Gly Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Thr
50 55 60

Lys Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val
65 70 75 80

Asp Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro
85 90 95

Leu Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro
100 105 110

Lys Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met
115 120 125

Gly Asp Asp Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile
130 135 140

Arg Asp
145

<210> 139
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 139
cagactaatt cgagctcggt accc 24

<210> 140
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 140
tttcctgaaa tgttttcaac act 23

<210> 141
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 141
aacatttcag gaaatggagg gcc 23

<210> 142
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 142
cacgtagttg aaagggaggc cttc 24

<210> 143
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 143
tttcaactac gtgaaggaca gagt 24

<210> 144
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 144
ggagatgctc tccaatgtgt cgcc 24

<210> 145
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 145
ggagagcatc tccaacgaga taaa 24

<210> 146
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 146
acttgcttca acctgctctg cctt 24

<210> 147
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 147
caggttgaag caagtaaaga aatg 24

<210> 148
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 148
gcaggtcgac tctagaggat ccat 24

<210> 149
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 149
cagactaatt cgacgtcggt accc 24

<210> 150
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 150
cagtcgcggt gctgggataa caga 24

<210> 151
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 151
ccagcaccgc gactgttcaa ggcc 24

<210> 152
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 152
cactatggtt atctcgttgg agat 24

<210> 153
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 153
gagataacca tagtggcaac tggt 24

<210> 154

<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 154
ttactgaatt cattagttgt aggcatccgg gtggcctttg aggta 45

<210> 155
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 155
ccgctcgaga aaagagatca agtcgatgtc gccgattgtg cc 42

<210> 156
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 156
cgttctagac tattaatcgc ggattttagc atgagttgc 39

<210> 157
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 157
ccgctcgaga aaagagatca agtcgatgtc aaagattgtg ccaaccatga aatcaaagaa 60

gttttgg 67

<210> 158
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 158
cgttctagac tattaatcgc ggattttagc atgagttgc 39

<210> 159
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 159
cggggtacca ggatgtcatg gttcagaacc atgtatcatt aaccgtggta aacc 54

<210> 160
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> sense primer

<400> 160
ggcgattaag ttgggtaacg ccaggg 26

<210> 161
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 161
gcctcaatcg atggtttatc agttgatgtt ccc 33

<210> 162
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 162
gggaacatca actgataaac catcgattga ggc 33

<210> 163
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 163
catggcatgc aattacatga aatgcccatt gg 32

<210> 164
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> anti-sense primer

<400> 164
ggaaacagct atgaccatga ttacgcc 27

<210> 165
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 165
ctacgcatgc cattacatga aatgcccatt ggttaatgga caacaatatg 50

<210> 166
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> OB27 sense primer

<400> 166
ggaattcctc gagaaaagag atcaagtcga tgtcaaagat tgtgcc 46

<210> 167
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 167

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Thr Lys
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Val Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly
100 105 110

Asp Asp Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 168
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 168

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Lys
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys

85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly
100 105 110

Asp Asp Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 169
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 169

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Ser Lys
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Ile Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 170
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 170

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Ser Lys
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly
100 105 110

Asp Asp Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 171
<211> 129
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 171

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Leu Phe Glu Ala Asn Gln Asn Ser Lys
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 172
<211> 128
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 172

Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val Leu
1 5 10 15

Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly Lys
20 25 30

Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Thr Lys Thr
35 40 45

Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp Val
50 55 60

Pro Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu Val
65 70 75 80

Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys Ile
85 90 95

Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly Asp
100 105 110

Asp Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg Asp
115 120 125

<210> 173
<211> 146
<212> PRT
<213> Dermatophagoides farinae

<400> 173

Met Ile Ser Lys Ile Leu Cys Leu Ser Leu Leu Val Ala Ala Val Val
1 5 10 15

Ala Asp Gln Val Asp Val Lys Asp Cys Ala Asn Asn Glu Ile Lys Lys
20 25 30

Val Met Val Asp Gly Cys His Gly Ser Asp Pro Cys Ile Ile His Arg
35 40 45

Gly Lys Pro Phe Thr Leu Glu Ala Leu Phe Asp Ala Asn Gln Asn Thr
50 55 60

Lys Thr Ala Lys Ile Glu Ile Lys Ala Ser Leu Asp Gly Leu Glu Ile
65 70 75 80

Asp Val Pro Gly Ile Asp Thr Asn Ala Cys His Phe Met Lys Cys Pro
85 90 95

Leu Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro
100 105 110

Lys Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Leu Ile
115 120 125

Gly Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile
130 135 140

Arg Asp
145

<210> 174
<211> 138
<212> PRT
<213> Dermatophagoides farinae

<400> 174

Ser Leu Leu Val Ala Ala Val Val Ala Asp Gln Val Asp Val Lys Asp
1 5 10 15

Cys Ala Asn Asn Glu Ile Lys Lys Val Met Val Asp Gly Cys His Gly
20 25 30

Ser Asp Pro Cys Ile Ile His Arg Gly Lys Pro Phe Thr Leu Glu Ala
35 40 45

Leu Phe Asp Ala Asn Gln Asn Ser Thr Thr Ala Lys Ile Glu Ile Lys
50 55 60

Ala Ser Leu Asp Gly Leu Glu Ile Asp Val Pro Gly Ile Asp Thr Asn
65 70 75 80

Ala Cys His Phe Met Lys Cys Pro Leu Val Lys Gly Gln Gln Tyr Asp
85 90 95

Ala Lys Tyr Thr Trp Asn Val Pro Lys Ile Ala Pro Lys Ser Glu Asn
100 105 110

Val Val Val Thr Val Lys Leu Val Gly Asp Asn Gly Val Leu Ala Cys
115 120 125

Ala Ile Ala Thr His Ala Lys Ile Arg Asp
130 135

<210> 175
<211> 129
<212> PRT
<213> Dermatophagoides farinae

<400> 175

Asp Gln Val Asp Val Lys Asp Cys Ala Asn Asn Glu Ile Lys Lys Val
1 5 10 15

Met Val Asp Gly Cys His Gly Ser Asp Pro Cys Ile Ile His Arg Gly

20 25 30

Lys Pro Phe Thr Leu Glu Ala Leu Phe Asp Ala Asn Gln Asn Thr Lys
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Leu Asp Gly Leu Glu Ile Asp
50 55 60

Val Pro Gly Ile Asp Thr Asn Ala Cys His Phe Val Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Leu Ile Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 176
<211> 129
<212> PRT
<213> Dermatophagoides farinae

<400> 176

Asp Gln Val Asp Val Lys Asp Cys Ala Asn Asn Glu Ile Lys Lys Val
1 5 10 15

Met Val Asp Gly Cys His Gly Ser Asp Pro Cys Ile Ile His Arg Gly
20 25 30

Lys Pro Phe Thr Leu Glu Ala Leu Phe Asp Ala Asn Gln Asn Thr Lys
35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Leu Asp Gly Leu Glu Ile Asp
50 55 60

Val Pro Gly Ile Asp Thr Asn Ala Cys His Phe Met Lys Cys Pro Leu
65 70 75 80

Val Lys Gly Gln Gln Tyr Asp Ala Lys Tyr Thr Trp Asn Val Pro Lys
85 90 95

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Leu Val Gly
100 105 110

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg
115 120 125

Asp

<210> 177
<211> 145
<212> PRT
<213> Euroglyphus maynei

<400> 177

Met Tyr Lys Ile Leu Cys Leu Ser Leu Leu Val Ala Ala Val Ala Ala
1 5 10 15

Asp Gln Val Asp Ile Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
20 25 30

Met Val Pro Gly Cys Lys Gly Ser Glu Pro Cys Val Ile His Arg Gly
35 40 45

Thr Ala Phe Gln Leu Glu Ala Val Phe Asp Ala Asn Gln Asn Ser Asn
50 55 60

Ala Ala Lys Ile Glu Ile Lys Ala Thr Ile Asp Gly Val Glu Ile Asp
65 70 75 80

Val Pro Gly Ile Asp Asn Asn Leu Cys His Phe Met Lys Cys Pro Leu
85 90 95

Val Lys Gly Gln Glu Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Arg
100 105 110

Ile Ala Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Leu Leu Gly
115 120 125

Asp Asn Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg

130 135 140

Asp
145

<210> 178
<211> 135
<212> PRT
<213> Euroglyphus maynei

<400> 178

Val Ala Ala Val Ala Ala Asp Gln Val Asp Val Lys Asp Cys Ala Asn
1 5 10 15

His Glu Ile Lys Lys Val Met Val Pro Gly Cys Lys Gly Ser Glu Pro
20 25 30

Cys Val Ile His Arg Gly Thr Ala Phe Gln Leu Glu Ala Val Phe Asp
35 40 45

Ala Asn Gln Asn Ser Asn Ala Ala Lys Ile Glu Ile Lys Ala Thr Ile
50 55 60

Asp Gly Val Glu Ile Asp Val Pro Gly Ile Asp Asn Asn Leu Cys His
65 70 75 80

Phe Met Lys Cys Pro Leu Val Lys Gly Gln Glu Tyr Asp Ile Lys Tyr
85 90 95

Thr Trp Asn Val Pro Arg Ile Ala Pro Lys Ser Glu Asn Val Val Val
100 105 110

Thr Val Lys Leu Leu Gly Asp Asn Gly Val Leu Ala Cys Ala Ile Ala
115 120 125

Thr His Ala Lys Ile Arg Asp
130 135

<210> 179
<211> 320
<212> PRT
<213> Dermatophagoides pteronyssinus

<400> 179

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Met Lys Ile Val Leu Ala Ile Ala Ser Leu Leu Ala Leu Ser Ala Val
1               5                  10                  15

Tyr Ala Arg Pro Ser Ser Ile Lys Thr Phe Glu Glu Tyr Lys Lys Ala
            20                  25                  30

Phe Asn Lys Ser Tyr Ala Thr Phe Glu Asp Glu Glu Ala Ala Arg Lys
        35                  40                  45

Asn Phe Leu Glu Ser Val Lys Tyr Val Gln Ser Asn Gly Gly Ala Ile
    50                  55                  60

Asn His Leu Ser Asp Leu Ser Leu Asp Glu Phe Lys Asn Arg Phe Leu
65                  70                  75                  80

Met Ser Ala Glu Ala Phe Glu His Leu Lys Thr Gln Phe Asp Leu Asn
                85                  90                  95

Ala Glu Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile
            100                 105                 110

Asp Leu Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly
        115                 120                 125

Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala
    130                 135                 140

Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu
145                 150                 155                 160

Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg
                165                 170                 175

Gly Ile Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr
            180                 185                 190

Arg Tyr Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg
        195                 200                 205

Phe Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys
    210                 215                 220

Ile Arg Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile
```

225 230 235 240

Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile
245 250 255

Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile
260 265 270

Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn
275 280 285

Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala
290 295 300

Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
305 310 315 320

<210> 180
<211> 321
<212> PRT
<213> Euroglyphus maynei

<400> 180

Met Lys Ile Ile Leu Ala Ile Ala Ser Leu Leu Val Leu Ser Ala Val
1 5 10 15

Tyr Ala Arg Pro Ala Ser Ile Lys Thr Phe Glu Glu Phe Lys Lys Ala
20 25 30

Phe Asn Lys Thr Tyr Ala Thr Pro Glu Lys Glu Glu Val Ala Arg Lys
35 40 45

Asn Phe Leu Glu Ser Leu Lys Tyr Val Glu Ser Asn Lys Gly Ala Ile
50 55 60

Asn His Leu Ser Asp Leu Ser Leu Asp Glu Phe Lys Asn Gln Phe Leu
65 70 75 80

Met Asn Ala Asn Ala Phe Glu Gln Leu Lys Thr Gln Phe Asp Leu Asn
85 90 95

Ala Glu Thr Tyr Ala Cys Ser Ile Asn Ser Val Ser Leu Pro Ser Glu
100 105 110

Leu Asp Leu Arg Ser Leu Arg Thr Val Thr Pro Ile Arg Met Gln Gly
115 120 125

Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ser Thr Glu Ser
130 135 140

Ala Tyr Leu Ala Tyr Arg Asn Met Ser Leu Asp Leu Ala Glu Gln Glu
145 150 155 160

Leu Val Asp Cys Ala Ser Gln Asn Gly Cys His Gly Asp Thr Ile Pro
165 170 175

Arg Gly Ile Glu Tyr Ile Gln Gln Asn Gly Val Val Gln Glu His Tyr
180 185 190

Tyr Pro Tyr Val Ala Arg Glu Gln Ser Cys His Arg Pro Asn Ala Gln
195 200 205

Arg Tyr Gly Leu Lys Asn Tyr Cys Gln Ile Ser Pro Pro Asp Ser Asn
210 215 220

Lys Ile Arg Gln Ala Leu Thr Gln Thr His Thr Ala Val Ala Val Ile
225 230 235 240

Ile Gly Ile Lys Asp Leu Asn Ala Phe Arg His Tyr Asp Gly Arg Thr
245 250 255

Ile Met Gln His Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn
260 265 270

Ile Val Gly Tyr Gly Asn Thr Gln Gly Val Asp Tyr Trp Ile Val Arg
275 280 285

Asn Ser Trp Asp Thr Thr Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala
290 295 300

Ala Asn Ile Asn Leu Met Met Ile Glu Gln Tyr Pro Tyr Val Val Met
305 310 315 320

Leu

<210> 181
<211> 246
<212> PRT
<213> Euroglyphus maynei

<400> 181

Lys Asn Gln Phe Leu Met Asn Ala Asn Ala Phe Glu Gln Leu Lys Thr
1 5 10 15

Gln Phe Asp Leu Asn Ala Glu Thr Tyr Ala Cys Ser Ile Asn Ser Val
20 25 30

Ser Leu Pro Ser Glu Leu Asp Leu Arg Ser Leu Arg Thr Val Thr Pro
35 40 45

Ile Arg Met Gln Gly Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly Val
50 55 60

Ala Ser Thr Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Met Ser Leu Asp
65 70 75 80

Leu Ala Glu Gln Glu Leu Val Asp Cys Ala Ser Gln Asn Gly Cys His
85 90 95

Gly Asp Thr Ile Pro Arg Gly Ile Glu Tyr Ile Gln Gln Asn Gly Val
100 105 110

Val Gln Glu His Tyr Tyr Pro Tyr Val Ala Arg Glu Gln Ser Cys His
115 120 125

Arg Pro Asn Ala Gln Arg Tyr Gly Leu Lys Asn Tyr Cys Gln Ile Ser
130 135 140

Pro Pro Asp Ser Asn Lys Ile Arg Gln Ala Leu Thr Gln Thr His Thr
145 150 155 160

Ala Val Ala Val Ile Ile Gly Ile Lys Asp Leu Asn Ala Phe Arg His
165 170 175

Tyr Asp Gly Arg Thr Ile Met Gln His Asp Asn Gly Tyr Gln Pro Asn
180 185 190

Tyr His Ala Val Asn Ile Val Gly Tyr Gly Asn Thr Gln Gly Val Asp
195 200 205

```
Tyr Trp Ile Val Arg Asn Ser Trp Asp Thr Thr Trp Gly Asp Asn Gly
    210                 215                 220

Tyr Gly Tyr Phe Ala Ala Asn Ile Asn Leu Met Met Ile Glu Gln Tyr
225                 230                 235                 240

Pro Tyr Val Val Met Leu
                245
```

<210> 182
<211> 327
<212> PRT
<213> Euroglyphus maynei

<400> 182

```
Lys His Leu Ser Thr Ile Met Lys Ile Ile Leu Ala Ile Ala Ser Leu
1               5                   10                  15

Leu Val Leu Ser Ala Val Tyr Ala Arg Pro Ala Ser Ile Lys Thr Phe
            20                  25                  30

Glu Glu Phe Lys Lys Ala Phe Asn Lys Ser Tyr Ala Thr Pro Glu Lys
        35                  40                  45

Glu Glu Val Ala Arg Lys Asn Phe Leu Glu Ser Leu Lys Tyr Val Glu
    50                  55                  60

Ser Asn Lys Gly Ala Ile Asn His Leu Ser Asp Leu Ser Leu Asp Glu
65                  70                  75                  80

Phe Lys Asn Gln Phe Leu Met Asn Ala Asn Ala Phe Glu Gln Leu Lys
                85                  90                  95

Thr Gln Phe Asp Leu Asn Ala Glu Thr Tyr Ala Cys Ser Ile Asn Ser
            100                 105                 110

Val Ser Leu Pro Ser Glu Leu Asp Leu Arg Ser Leu Arg Thr Val Thr
        115                 120                 125

Pro Ile Arg Met Gln Gly Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly
    130                 135                 140
```

```
Val Ala Ser Thr Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Met Ser Leu
145                 150                 155                 160

Asp Leu Ala Glu Gln Glu Leu Val Asp Cys Ala Ser Gln Asn Gly Cys
                165                 170                 175

His Gly Asp Thr Ile Pro Arg Gly Ile Glu Tyr Ile Gln Gln Asn Gly
            180                 185                 190

Val Val Gln Glu His Tyr Tyr Pro Tyr Val Ala Arg Glu Gln Ser Cys
        195                 200                 205

His Arg Pro Asn Ala Gln Arg Tyr Gly Leu Lys Asn Tyr Cys Gln Ile
    210                 215                 220

Ser Pro Pro Asp Ser Asn Lys Ile Arg Gln Ala Leu Thr Gln Thr His
225                 230                 235                 240

Thr Ala Val Ala Val Ile Ile Gly Ile Lys Asp Leu Asn Ala Phe Arg
                245                 250                 255

His Tyr Asp Gly Arg Thr Ile Met Gln His Asp Asn Gly Tyr Gln Pro
            260                 265                 270

Asn Tyr His Ala Val Asn Ile Val Gly Tyr Gly Asn Thr Gln Gly Val
        275                 280                 285

Asp Tyr Trp Ile Val Arg Asn Ser Trp Asp Thr Thr Trp Gly Asp Asn
    290                 295                 300

Gly Tyr Gly Tyr Phe Ala Ala Asn Ile Asn Leu Met Met Ile Glu Gln
305                 310                 315                 320

Tyr Pro Tyr Val Val Ile Leu
                325
```

<210> 183
<211> 321
<212> PRT
<213> Dermatophagoides farinae

<400> 183

```
Met Lys Phe Val Leu Ala Ile Ala Ser Leu Leu Ala Leu Ser Thr Val
1               5                   10                  15
```

```
Tyr Ala Arg Pro Ala Ser Ile Lys Thr Phe Glu Glu Phe Lys Lys Ala
            20                  25                  30

Phe Asn Lys Asn Tyr Ala Thr Val Glu Glu Glu Glu Val Ala Arg Lys
        35                  40                  45

Asn Phe Leu Glu Ser Leu Lys Tyr Val Glu Ala Asn Lys Gly Ala Ile
    50                  55                  60

Asn His Leu Ser Asp Leu Ser Leu Asp Glu Phe Lys Asn Arg Phe Leu
65                  70                  75                  80

Met Ser Ala Glu Ala Phe Glu Gln Leu Lys Thr Gln Phe Asp Leu Asn
                85                  90                  95

Ala Glu Thr Ser Ala Cys Arg Ile Asn Ser Val Asn Val Pro Ser Glu
            100                 105                 110

Leu Asp Leu Arg Ser Leu Arg Thr Val Thr Pro Ile Arg Met Gln Gly
        115                 120                 125

Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser
    130                 135                 140

Ala Tyr Leu Ala Tyr Arg Asn Thr Ser Leu Asp Leu Ser Glu Gln Glu
145                 150                 155                 160

Leu Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro
                165                 170                 175

Arg Gly Ile Glu Tyr Ile Gln Gln Asn Gly Val Val Glu Glu Arg Ser
            180                 185                 190

Tyr Pro Tyr Val Ala Arg Glu Gln Arg Cys Arg Arg Pro Asn Ser Gln
        195                 200                 205

His Tyr Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asp Val Lys
    210                 215                 220

Gln Ile Arg Glu Ala Leu Thr Gln Thr His Thr Ala Ile Ala Val Ile
225                 230                 235                 240
```

```
Ile Gly Ile Lys Asp Leu Arg Ala Phe Gln His Tyr Asp Gly Arg Thr
                245                 250                 255

Ile Ile Gln His Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn
            260                 265                 270

Ile Val Gly Tyr Gly Ser Thr Gln Gly Asp Asp Tyr Trp Ile Val Arg
        275                 280                 285

Asn Ser Trp Asp Thr Thr Trp Gly Asp Ser Gly Tyr Gly Tyr Phe Gln
    290                 295                 300

Ala Gly Asn Asn Leu Met Met Ile Glu Gln Tyr Pro Tyr Val Val Ile
305                 310                 315                 320

Met
```

<210> 184
<211> 211
<212> PRT
<213> Euroglyphus maynei

<400> 184

```
Thr Tyr Ala Cys Ser Ile Asn Ser Val Ser Leu Pro Ser Glu Leu Asp
1               5                   10                  15

Leu Arg Ser Leu Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys
            20                  25                  30

Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ser Thr Glu Ser Ala Tyr
        35                  40                  45

Leu Ala Tyr Arg Asn Met Ser Leu Asp Leu Ala Glu Gln Glu Leu Val
    50                  55                  60

Asp Cys Ala Ser Gln Asn Gly Cys His Gly Asp Thr Ile Pro Arg Gly
65                  70                  75                  80

Ile Glu Tyr Ile Gln Gln Asn Gly Val Val Gln Glu His Tyr Tyr Pro
                85                  90                  95

Tyr Val Ala Arg Glu Gln Ser Cys His Arg Pro Asn Ala Gln Arg Tyr
```

```
            100                 105                 110

Gly Leu Lys Asn Tyr Cys Gln Ile Ser Pro Pro Asp Ser Asn Lys Ile
        115                 120                 125

Arg Gln Ala Leu Thr Gln Thr His Thr Ala Val Ala Val Ile Ile Gly
    130                 135                 140

Ile Lys Asp Leu Asn Ala Phe Arg His Tyr Asp Gly Arg Thr Ile Met
145                 150                 155                 160

Gln His Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile Val
                165                 170                 175

Gly Tyr Gly Asn Thr Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser
            180                 185                 190

Trp Asp Thr Thr Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn
        195                 200                 205

Ile Asn Leu
    210
```

<210> 185
<211> 210
<212> PRT
<213> Dermatophagoides farinae

<400> 185

```
Ser Ala Cys Arg Ile Asn Ser Val Asn Val Pro Ser Glu Leu Asp Leu
1               5                   10                  15

Arg Ser Leu Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
            20                  25                  30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
        35                  40                  45

Ala Tyr Arg Asn Thr Ser Leu Asp Leu Ser Glu Gln Glu Leu Val Asp
    50                  55                  60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65                  70                  75                  80
```

Glu Tyr Ile Gln Gln Asn Gly Val Val Glu Glu Arg Ser Tyr Pro Tyr
85 90 95

Val Ala Arg Glu Gln Gln Cys Arg Arg Pro Asn Ser Gln His Tyr Gly
100 105 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asp Val Lys Gln Ile Arg
115 120 125

Glu Ala Leu Thr Gln Thr His Thr Ala Ile Ala Val Ile Ile Gly Ile
130 135 140

Lys Asp Leu Arg Ala Phe Gln His Tyr Asp Gly Arg Thr Ile Ile Gln
145 150 155 160

His Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile Val Gly
165 170 175

Tyr Gly Ser Thr Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
180 185 190

Asp Thr Thr Trp Gly Asp Ser Gly Tyr Gly Tyr Phe Gln Ala Gly Asn
195 200 205

Asn Leu
210

<210> 186
<211> 312
<212> PRT
<213> Phleum pratense

<400> 186

Met Ala Val His Gln Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Gly Ser Tyr Ala Ala Asp Leu Gly Tyr Gly Pro
20 25 30

Ala Thr Pro Ala Ala Pro Ala Ala Gly Tyr Thr Pro Ala Thr Pro Ala
35 40 45

Ala Pro Ala Gly Ala Glu Pro Ala Gly Lys Ala Thr Thr Glu Glu Gln

50 55 60

Lys Leu Ile Glu Lys Ile Asn Ala Gly Phe Lys Ala Ala Leu Ala Ala
65 70 75 80

Ala Ala Gly Val Pro Pro Ala Asp Lys Tyr Arg Thr Phe Val Ala Thr
85 90 95

Phe Gly Ala Ala Ser Asn Lys Ala Phe Ala Glu Gly Leu Ser Gly Glu
100 105 110

Pro Lys Gly Ala Ala Glu Ser Ser Ser Lys Ala Ala Leu Thr Ser Lys
115 120 125

Leu Asp Ala Ala Tyr Lys Leu Ala Tyr Lys Thr Ala Glu Gly Ala Thr
130 135 140

Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala Thr Val Ser Glu Ala Leu
145 150 155 160

Arg Ile Ile Ala Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Ala
165 170 175

Glu Glu Val Lys Val Ile Pro Ala Gly Glu Leu Gln Val Ile Glu Lys
180 185 190

Val Asp Ala Ala Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro
195 200 205

Ala Asn Asp Lys Phe Thr Val Phe Glu Ala Ala Phe Asn Asp Ala Ile
210 215 220

Lys Ala Ser Thr Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala
225 230 235 240

Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala
245 250 255

Pro Glu Val Lys Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile
260 265 270

Thr Ala Met Ser Glu Ala Gln Lys Ala Ala Lys Pro Ala Ala Ala Ala
275 280 285

Thr Ala Thr Ala Thr Ala Ala Val Gly Ala Ala Thr Gly Ala Ala Thr
290 295 300

Ala Ala Thr Gly Gly Tyr Lys Val
305 310

<210> 187
<211> 312
<212> PRT
<213> Phleum pratense

<400> 187

Met Ala Val His Gln Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Leu Gly Tyr Gly Pro
20 25 30

Ala Thr Pro Ala Ala Pro Ala Ala Gly Tyr Thr Pro Ala Thr Pro Ala
35 40 45

Ala Pro Ala Glu Ala Ala Pro Ala Gly Lys Ala Thr Thr Glu Glu Gln
50 55 60

Lys Leu Ile Glu Lys Ile Asn Ala Gly Phe Lys Ala Ala Leu Ala Ala
65 70 75 80

Ala Ala Gly Val Gln Pro Ala Asp Lys Tyr Arg Thr Phe Val Ala Thr
85 90 95

Phe Gly Ala Ala Ser Asn Lys Ala Phe Ala Glu Gly Leu Ser Gly Glu
100 105 110

Pro Lys Gly Ala Ala Glu Ser Ser Ser Lys Ala Ala Leu Thr Ser Lys
115 120 125

Leu Asp Ala Ala Tyr Lys Leu Ala Tyr Lys Thr Ala Glu Gly Ala Thr
130 135 140

Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu Ala Leu
145 150 155 160

```
Arg Ile Ile Ala Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Ala
                165                 170                 175

Glu Glu Val Lys Val Ile Pro Ala Gly Glu Leu Gln Val Ile Glu Lys
            180                 185                 190

Val Asp Ala Ala Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro
        195                 200                 205

Ala Asn Asp Lys Phe Thr Val Phe Glu Ala Ala Phe Asn Asp Ala Ile
    210                 215                 220

Lys Ala Ser Thr Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala
225                 230                 235                 240

Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala
                245                 250                 255

Pro Glu Val Lys Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile
            260                 265                 270

Thr Ala Met Ser Glu Ala Gln Lys Ala Ala Lys Pro Ala Ala Ala Ala
        275                 280                 285

Thr Ala Thr Ala Thr Ala Ala Val Gly Ala Ala Thr Gly Ala Ala Thr
    290                 295                 300

Ala Ala Thr Gly Gly Tyr Lys Val
305                 310
```

<210> 188
<211> 286
<212> PRT
<213> Phleum pratense

<400> 188

```
Ala Asp Leu Gly Tyr Gly Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
1               5                   10                  15

Tyr Thr Pro Ala Thr Pro Ala Ala Pro Ala Gly Ala Asp Ala Ala Gly
            20                  25                  30

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly
        35                  40                  45
```

```
Phe Lys Ala Ala Leu Ala Gly Ala Gly Val Gln Pro Ala Asp Lys Tyr
    50                  55                  60

Arg Thr Phe Val Ala Thr Phe Gly Pro Ala Ser Asn Lys Ala Phe Ala
65                  70                  75                  80

Glu Gly Leu Ser Gly Glu Pro Lys Gly Ala Ala Glu Ser Ser Ser Lys
                85                  90                  95

Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr Lys
            100                 105                 110

Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala
        115                 120                 125

Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val His
    130                 135                 140

Ala Val Lys Pro Ala Ala Glu Glu Val Lys Val Ile Pro Ala Gly Glu
145                 150                 155                 160

Leu Gln Val Ile Glu Lys Val Asp Ala Ala Phe Lys Val Ala Ala Thr
                165                 170                 175

Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu Ala
            180                 185                 190

Ala Phe Asn Asp Glu Ile Lys Ala Ser Thr Gly Gly Ala Tyr Glu Ser
        195                 200                 205

Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala
    210                 215                 220

Ala Thr Val Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Phe Glu Thr
225                 230                 235                 240

Ala Leu Lys Lys Ala Ile Thr Ala Met Ser Glu Ala Gln Lys Ala Ala
                245                 250                 255

Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly Ala
            260                 265                 270
```

Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly Gly Tyr Lys Val
275 280 285

<210> 189
<211> 333
<212> PRT
<213> Poa pratensis

<400> 189

Met Ala Val His Gln Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Val Gly Tyr Gly Ala
20 25 30

Pro Ala Thr Leu Ala Thr Pro Ala Thr Pro Ala Ala Pro Ala Ala Gly
35 40 45

Tyr Thr Pro Ala Ala Pro Ala Gly Ala Ala Pro Lys Ala Thr Thr Asp
50 55 60

Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly Phe Lys Ala Ala Val
65 70 75 80

Ala Ala Ala Ala Gly Val Pro Ala Val Asp Lys Tyr Lys Thr Phe Val
85 90 95

Ala Thr Phe Gly Thr Ala Ser Asn Lys Ala Phe Ala Glu Ala Leu Ser
100 105 110

Thr Glu Pro Lys Gly Ala Ala Ala Ala Ser Ser Asn Ala Val Leu Thr
115 120 125

Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr Lys Ser Ala Glu Gly
130 135 140

Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu
145 150 155 160

Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val His Ala Val Lys Pro
165 170 175

Ala Gly Glu Glu Val Lys Ala Ile Pro Ala Gly Glu Leu Gln Val Ile

180 185 190

Asp Lys Val Asp Ala Ala Phe Lys Val Ala Ala Thr Ala Ala Asn Ala
195 200 205

Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu Ala Ala Phe Asn Asp
210 215 220

Ala Ile Lys Ala Ser Thr Gly Gly Ala Tyr Gln Ser Tyr Lys Phe Ile
225 230 235 240

Pro Ala Leu Glu Ala Ala Val Lys Gln Ser Tyr Ala Ala Thr Val Ala
245 250 255

Thr Ala Pro Ala Val Lys Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys
260 265 270

Ala Ile Thr Ala Met Ser Gln Ala Gln Lys Ala Ala Lys Pro Ala Ala
275 280 285

Ala Val Thr Ala Thr Ala Thr Gly Ala Val Gly Ala Ala Thr Gly Ala
290 295 300

Val Gly Ala Ala Thr Gly Ala Ala Thr Ala Ala Ala Gly Gly Tyr Lys
305 310 315 320

Thr Gly Ala Ala Thr Pro Thr Ala Gly Gly Tyr Lys Val
325 330

<210> 190
<211> 307
<212> PRT
<213> Poa pratensis

<400> 190

Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Val Ala Leu Val
1 5 10 15

Val Gly Pro Ala Ala Ser Tyr Ala Ala Asp Leu Ser Tyr Gly Ala Pro
20 25 30

Ala Thr Pro Ala Ala Pro Ala Ala Gly Tyr Thr Pro Ala Ala Pro Ala
35 40 45

Gly Ala Ala Pro Lys Ala Thr Thr Asp Glu Gln Lys Met Ile Glu Lys
50 55 60

Ile Asn Val Gly Phe Lys Ala Ala Val Ala Ala Ala Gly Gly Val Pro
65 70 75 80

Ala Ala Asn Lys Tyr Lys Thr Phe Val Ala Thr Phe Gly Ala Ala Ser
85 90 95

Asn Lys Ala Phe Ala Glu Ala Leu Ser Thr Glu Pro Lys Gly Ala Ala
100 105 110

Val Asp Ser Ser Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala Tyr
115 120 125

Lys Leu Ala Tyr Lys Ser Ala Glu Gly Ala Thr Pro Glu Ala Lys Tyr
130 135 140

Asp Asp Tyr Val Ala Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala Gly
145 150 155 160

Thr Leu Glu Val His Gly Val Lys Pro Ala Ala Glu Glu Val Lys Ala
165 170 175

Thr Pro Ala Gly Glu Leu Gln Val Ile Asp Lys Val Asp Ala Ala Phe
180 185 190

Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys Phe
195 200 205

Thr Val Phe Glu Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser Thr Gly
210 215 220

Gly Ala Tyr Gln Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val
225 230 235 240

Lys Gln Ser Tyr Ala Ala Thr Val Ala Thr Ala Pro Ala Val Lys Tyr
245 250 255

Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile Thr Ala Met Ser Gln
260 265 270

Ala Gln Lys Ala Ala Lys Pro Ala Ala Ala Ala Thr Gly Thr Ala Thr
275 280 285

Ala Ala Val Gly Ala Ala Thr Gly Ala Ala Thr Ala Ala Ala Gly Gly
290 295 300

Tyr Lys Val
305

<210> 191
<211> 276
<212> PRT
<213> Phleum pratense

<400> 191

Ala Asp Leu Gly Tyr Gly Gly Pro Ala Thr Pro Ala Ala Pro Ala Glu
1 5 10 15

Ala Ala Pro Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu
20 25 30

Lys Ile Asn Asp Gly Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val
35 40 45

Pro Pro Ala Asp Lys Tyr Lys Thr Phe Val Ala Thr Phe Gly Ala Ala
50 55 60

Ser Asn Lys Ala Phe Ala Glu Gly Leu Ser Ala Glu Pro Lys Gly Ala
65 70 75 80

Ala Glu Ser Ser Ser Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala
85 90 95

Tyr Lys Leu Ala Tyr Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys
100 105 110

Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala
115 120 125

Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Ala Glu Glu Val Lys
130 135 140

Val Ile Pro Ala Gly Glu Leu Gln Val Ile Glu Lys Val Asp Ser Ala
145 150 155 160

Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
165 170 175

Phe Thr Val Phe Glu Ala Ala Phe Asn Asn Ala Ile Lys Ala Ser Thr
180 185 190

Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala
195 200 205

Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys
210 215 220

Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile Thr Ala Met Ser
225 230 235 240

Glu Ala Gln Lys Ala Ala Lys Pro Ala Thr Glu Ala Thr Ala Thr Ala
245 250 255

Thr Ala Ala Val Gly Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly
260 265 270

Gly Tyr Lys Val
275

<210> 192
<211> 276
<212> PRT
<213> Phleum pratense

<400> 192

Ala Asp Leu Gly Tyr Gly Gly Pro Ala Thr Pro Ala Ala Pro Ala Glu
1 5 10 15

Ala Ala Pro Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu
20 25 30

Lys Ile Asn Asp Gly Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val
35 40 45

Pro Pro Ala Asp Lys Tyr Lys Thr Phe Val Ala Thr Phe Gly Ala Ala
50 55 60

Ser Asn Lys Ala Phe Ala Glu Gly Leu Ser Ala Glu Pro Lys Gly Ala
65 70 75 80

Ala Glu Ser Ser Ser Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala
85 90 95

Tyr Lys Leu Ala Tyr Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys
100 105 110

Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala
115 120 125

Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Ala Glu Glu Val Lys
130 135 140

Val Ile Pro Ala Gly Glu Leu Gln Val Ile Glu Lys Val Asp Ser Ala
145 150 155 160

Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
165 170 175

Phe Thr Val Phe Glu Ala Ala Phe Asn Asn Ala Ile Lys Ala Ser Thr
180 185 190

Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala
195 200 205

Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys
210 215 220

Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile Thr Ala Met Ser
225 230 235 240

Glu Ala Gln Lys Ala Ala Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala
245 250 255

Thr Ser Ala Val Gly Ala Ala Thr Gly Ala Thr Thr Ala Ala Ala Gly
260 265 270

Gly Tyr Lys Val
275

<210> 193

<211> 276
<212> PRT
<213> Phleum pratense

<400> 193

Ala Asp Leu Gly Tyr Gly Gly Pro Ala Thr Pro Ala Ala Pro Ala Glu
1 5 10 15

Ala Ala Pro Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu
20 25 30

Lys Ile Asn Asp Gly Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val
35 40 45

Pro Pro Ala Asp Lys Tyr Lys Thr Phe Val Ala Thr Phe Gly Ala Ala
50 55 60

Ser Asn Lys Ala Phe Ala Glu Gly Leu Ser Ala Glu Pro Lys Gly Ala
65 70 75 80

Ala Glu Ser Ser Ser Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala
85 90 95

Tyr Lys Leu Ala Tyr Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Lys
100 105 110

Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala
115 120 125

Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Ala Glu Glu Val Lys
130 135 140

Val Ile Pro Ala Gly Glu Leu Gln Val Ile Glu Lys Val Asp Ser Ala
145 150 155 160

Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
165 170 175

Phe Thr Val Phe Glu Ala Ala Phe Asn Asn Ala Ile Lys Ala Ser Thr
180 185 190

Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala
195 200 205

Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys
210 215 220

Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Phe Thr Ala Met Ser
225 230 235 240

Glu Ala Gln Lys Ala Ala Lys Pro Ala Thr Glu Ala Thr Ala Thr Ala
245 250 255

Thr Ala Ala Val Gly Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly
260 265 270

Gly Tyr Lys Val
275

<210> 194
<211> 276
<212> PRT
<213> Phleum pratense

<400> 194

Ala Asp Leu Gly Tyr Gly Gly Pro Ala Thr Pro Ala Ala Pro Ala Glu
1 5 10 15

Ala Ala Pro Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu
20 25 30

Lys Ile Asn Asp Gly Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val
35 40 45

Pro Pro Ala Asp Lys Tyr Lys Thr Phe Val Ala Thr Phe Gly Ala Ala
50 55 60

Ser Asn Lys Ala Phe Ala Glu Gly Leu Ser Ala Glu Pro Lys Gly Ala
65 70 75 80

Ala Glu Ser Ser Ser Lys Ala Ala Leu Thr Ser Lys Leu Asp Ala Ala
85 90 95

Tyr Lys Leu Ala Tyr Lys Thr Ala Glu Gly Ala Thr Pro Glu Ala Glu
100 105 110

Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala

115 120 125

Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Ala Glu Glu Val Lys
130 135 140

Val Ile Pro Ala Gly Glu Leu Gln Val Ile Glu Lys Val Asp Ser Ala
145 150 155 160

Leu Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
165 170 175

Phe Thr Val Phe Glu Ala Ala Phe Asn Asn Ala Ile Lys Ala Ser Thr
180 185 190

Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala
195 200 205

Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys
210 215 220

Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile Thr Ala Thr Ser
225 230 235 240

Glu Ala Gln Lys Ala Ala Lys Pro Ala Thr Glu Ala Thr Ala Thr Ala
245 250 255

Thr Ala Ala Val Gly Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly
260 265 270

Gly Tyr Lys Val
275

<210> 195
<211> 276
<212> PRT
<213> Phleum pratense

<400> 195

Ala Asp Leu Gly Tyr Gly Gly Pro Ala Thr Pro Ala Ala Pro Ala Glu
1 5 10 15

Ala Ala Pro Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu
20 25 30

Lys Ile Asn Asp Gly Phe Lys Ala Ala Leu Ala Ala Ala Ala Gly Val
35 40 45

Pro Pro Ala Asp Lys Tyr Lys Thr Phe Val Ala Thr Phe Gly Ala Ala
50 55 60

Ser Asn Lys Ala Phe Ala Glu Gly Leu Ser Ala Glu Pro Lys Gly Ala
65 70 75 80

Ala Glu Ser Ser Ser Lys Gly Ala Leu Thr Ser Lys Leu Glu Ala Ala
85 90 95

Tyr Lys Leu Ala Tyr Lys Thr Ser Glu Gly Ala Thr Pro Glu Ala Lys
100 105 110

Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala
115 120 125

Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Ala Glu Glu Val Lys
130 135 140

Val Ile Pro Ala Gly Glu Leu Gln Phe Ile Glu Lys Val Asp Ser Ala
145 150 155 160

Leu Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
165 170 175

Phe Thr Val Phe Glu Ala Ala Phe Asn His Ala Ile Lys Ala Ser Thr
180 185 190

Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala
195 200 205

Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala Pro Glu Val Lys
210 215 220

Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile Thr Ala Met Ser
225 230 235 240

Glu Ala Gln Lys Ala Ala Lys Pro Ala Thr Glu Ala Thr Ala Thr Ala
245 250 255

Thr Ala Ala Val Gly Ala Ala Thr Gly Ala Ala Thr Ala Ala Thr Gly
260 265 270

Gly Tyr Lys Val
275

<210> 196
<211> 373
<212> PRT
<213> Poa pratensis

<400> 196

Met Asp Lys Ala Asn Gly Ala Tyr Lys Thr Ala Leu Lys Ala Ala Ser
1 5 10 15

Ala Val Ala Pro Ala Glu Lys Phe Pro Val Phe Gln Ala Thr Phe Asp
20 25 30

Lys Asn Leu Lys Glu Gly Leu Ser Gly Pro Asp Ala Val Gly Phe Ala
35 40 45

Lys Lys Leu Asp Ala Phe Ile Gln Thr Ser Tyr Leu Ser Thr Lys Ala
50 55 60

Ala Glu Pro Lys Glu Lys Phe Asp Leu Phe Val Leu Ser Leu Thr Glu
65 70 75 80

Val Leu Arg Phe Met Ala Gly Ala Val Lys Ala Pro Pro Ala Ser Lys
85 90 95

Phe Pro Ala Lys Pro Ala Pro Lys Val Ala Ala Tyr Thr Pro Ala Ala
100 105 110

Pro Ala Gly Ala Ala Pro Lys Ala Thr Thr Asp Glu Gln Lys Leu Ile
115 120 125

Glu Lys Ile Asn Val Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Gly
130 135 140

Val Pro Ala Ala Ser Lys Tyr Lys Thr Phe Val Ala Thr Phe Gly Ala
145 150 155 160

Ala Ser Asn Lys Ala Phe Ala Glu Ala Leu Ser Thr Glu Pro Lys Gly
165 170 175

Ala Ala Val Ala Ser Ser Lys Ala Val Leu Thr Ser Lys Leu Asp Ala
180 185 190

Ala Tyr Lys Leu Ala Tyr Lys Ser Ala Glu Gly Ala Thr Pro Glu Ala
195 200 205

Lys Tyr Asp Ala Tyr Val Ala Thr Leu Ser Glu Ala Leu Arg Ile Ile
210 215 220

Ala Gly Thr Leu Glu Val His Gly Val Lys Pro Ala Ala Glu Glu Val
225 230 235 240

Lys Ala Ile Pro Ala Gly Glu Leu Gln Val Ile Asp Lys Val Asp Ala
245 250 255

Ala Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp
260 265 270

Lys Phe Thr Val Phe Glu Ala Ala Phe Asn Asp Ala Ile Lys Ala Ser
275 280 285

Thr Gly Gly Ala Tyr Gln Ser Tyr Lys Phe Ile Pro Ala Leu Glu Ala
290 295 300

Ala Val Lys Gln Ser Tyr Ala Ala Thr Val Ala Thr Ala Pro Ala Val
305 310 315 320

Lys Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile Thr Ala Met
325 330 335

Ser Gln Ala Gln Lys Ala Ala Lys Pro Ala Ala Ala Val Thr Gly Thr
340 345 350

Ala Thr Ser Ala Val Gly Ala Ala Thr Gly Ala Ala Thr Ala Ala Ala
355 360 365

Gly Gly Tyr Lys Val
370

<210> 197
<211> 339
<212> PRT

<213> Lolium perenne

<400> 197

Met Ala Val Gln Lys His Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Ala Pro
20 25 30

Ala Thr Pro Ala Thr Pro Ala Ala Pro Ala Thr Ala Ala Thr Pro Ala
35 40 45

Thr Pro Ala Thr Pro Ala Thr Pro Ala Ala Val Pro Ser Gly Lys Ala
50 55 60

Thr Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly Phe Lys
65 70 75 80

Ala Ala Val Ala Ala Ala Ala Val Val Pro Pro Ala Asp Lys Tyr Lys
85 90 95

Thr Phe Val Glu Thr Phe Gly Thr Ala Thr Asn Lys Ala Phe Val Glu
100 105 110

Gly Leu Ala Ser Gly Tyr Ala Asp Gln Ser Lys Asn Gln Leu Thr Ser
115 120 125

Lys Leu Asp Ala Ala Leu Lys Leu Ala Tyr Glu Ala Ala Gln Gly Ala
130 135 140

Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala Thr Leu Thr Glu Ala
145 150 155 160

Leu Arg Val Ile Ala Gly Thr Leu Glu Val His Ala Val Lys Pro Ala
165 170 175

Ala Glu Glu Val Lys Val Gly Ala Ile Pro Ala Ala Glu Val Gln Leu
180 185 190

Ile Asp Lys Val Asp Ala Ala Tyr Arg Thr Ala Ala Thr Ala Ala Asn
195 200 205

Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu Asn Thr Phe Asn

210 215 220

Asn Ala Ile Lys Val Ser Leu Gly Ala Ala Tyr Asp Ser Tyr Lys Phe
225 230 235 240

Ile Pro Thr Leu Val Ala Ala Val Lys Gln Ala Tyr Ala Ala Lys Gln
245 250 255

Ala Thr Ala Pro Glu Val Lys Tyr Thr Val Ser Glu Thr Ala Leu Lys
260 265 270

Lys Ala Val Thr Ala Met Ser Glu Ala Glu Lys Glu Ala Thr Pro Ala
275 280 285

Ala Ala Ala Thr Ala Thr Pro Thr Pro Ala Ala Ala Thr Ala Thr Ala
290 295 300

Thr Pro Ala Ala Ala Tyr Ala Thr Ala Thr Pro Ala Ala Ala Thr Ala
305 310 315 320

Thr Ala Thr Pro Ala Ala Ala Thr Ala Thr Pro Ala Ala Ala Gly Gly
325 330 335

Tyr Lys Val

<210> 198
<211> 301
<212> PRT
<213> Lolium perenne

<400> 198

Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Thr Pro
20 25 30

Ala Ala Ala Ala Thr Pro Ala Thr Pro Ala Ala Thr Pro Ala Ala Ala
35 40 45

Gly Gly Lys Ala Thr Thr Asp Glu Gln Lys Leu Leu Glu Asp Val Asn
50 55 60

```
Ala Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Asn Ala Pro Pro Ala
65                  70                  75                  80

Asp Lys Phe Lys Ile Phe Glu Ala Ala Phe Ser Glu Ser Ser Lys Gly
                85                  90                  95

Leu Leu Ala Thr Ser Ala Ala Lys Ala Pro Gly Leu Ile Pro Lys Leu
            100                 105                 110

Asp Thr Ala Tyr Asp Val Ala Tyr Lys Ala Ala Glu Gly Ala Thr Pro
        115                 120                 125

Glu Ala Lys Tyr Asp Ala Phe Val Thr Ala Leu Thr Glu Ala Leu Arg
    130                 135                 140

Val Ile Ala Gly Ala Leu Glu Val His Ala Val Lys Pro Ala Thr Glu
145                 150                 155                 160

Glu Val Pro Ala Ala Lys Ile Pro Thr Gly Glu Leu Gln Ile Val Asp
                165                 170                 175

Lys Ile Asp Ala Ala Phe Lys Ile Ala Ala Thr Ala Ala Asn Ala Ala
            180                 185                 190

Pro Thr Asn Asp Lys Phe Thr Val Phe Glu Ser Ala Phe Asn Lys Ala
        195                 200                 205

Leu Asn Glu Cys Thr Gly Gly Ala Tyr Glu Thr Tyr Lys Phe Ile Pro
    210                 215                 220

Ser Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala
225                 230                 235                 240

Ala Pro Glu Val Lys Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala
                245                 250                 255

Ile Thr Ala Met Thr Gln Ala Gln Lys Ala Gly Lys Pro Ala Ala Ala
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Val Ala Thr Gly Ala Ala Thr Ala Ala
        275                 280                 285
```

Ala Gly Ala Ala Thr Ala Ala Ala Gly Gly Tyr Lys Ala
290 295 300

<210> 199
<211> 301
<212> PRT
<213> Lolium perenne

<400> 199

Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Asp Ser Tyr Ala Ala Asp Ala Gly Tyr Thr Pro
20 25 30

Ala Ala Ala Ala Thr Pro Ala Thr Pro Ala Ala Thr Pro Ala Ala Gly
35 40 45

Gly Gly Lys Ala Thr Thr Asp Glu Gln Lys Leu Leu Glu Asp Val Asn
50 55 60

Ala Gly Phe Lys Ala Ala Val Ala Ala Asp Ala Asn Ala Pro Pro Ala
65 70 75 80

Asp Lys Phe Lys Ile Phe Glu Ala Ala Phe Ser Glu Ser Cys Lys Gly
85 90 95

Leu Leu Ala Thr Ser Asp Ala Lys Ala Pro Gly Leu Ile Leu Lys Leu
100 105 110

Asp Thr Asp Tyr Asp Val Ala Tyr Lys Ala Gly Glu Gly Ala Thr Pro
115 120 125

Glu Ala Lys Tyr Asp Ala Phe Val Thr Ala Leu Thr Glu Ala Leu Arg
130 135 140

Val Ile Ala Gly Ala Leu Glu Val His Ala Val Lys Pro Ala Thr Glu
145 150 155 160

Glu Val Pro Ala Ala Lys Ile Pro Thr Gly Glu Leu Gln Ile Val Asp
165 170 175

Lys Ile Asp Ala Ala Phe Lys Ile Ala Ala Thr Ala Ala Asn Ala Ala
180 185 190

```
Pro Thr Asn Asp Lys Phe Thr Val Phe Glu Ser Ala Phe Asn Lys Ala
        195                 200                 205

Leu Lys Glu Cys Thr Gly Gly Ala Tyr Glu Thr Tyr Lys Phe Ile Pro
    210                 215                 220

Ser Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Thr Thr Val Ala Ala
225                 230                 235                 240

Ala Pro Glu Val Lys Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala
                245                 250                 255

Ile Thr Ala Met Ser Gln Ala Gln Lys Val Ala Lys Pro Ala Ala Ala
            260                 265                 270

Ala Ala Thr Gly Ala Ala Thr Val Ala Thr Gly Ala Ala Thr Ala Ala
        275                 280                 285

Ala Gly Gly Ala Thr Ala Ala Ala Gly Gly Tyr Lys Ala
    290                 295                 300
```

<210> 200
<211> 290
<212> PRT
<213> Phleum pratense

<400> 200

```
Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1               5                   10                  15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Ala Pro
            20                  25                  30

Ala Thr Pro Ala Ala Ala Gly Ala Glu Ala Gly Lys Ala Thr Thr Glu
        35                  40                  45

Glu Gln Lys Leu Ile Glu Asp Ile Asn Val Gly Phe Lys Ala Ala Val
    50                  55                  60

Ala Ala Ala Ala Ser Val Pro Ala Ala Asp Lys Phe Lys Thr Phe Glu
65                  70                  75                  80
```

```
Ala Ala Phe Thr Ser Ser Ser Lys Ala Ala Thr Ala Lys Ala Pro Gly
                85                  90                  95

Leu Val Pro Lys Leu Asp Ala Ala Tyr Ser Val Ala Tyr Lys Ala Ala
            100                 105                 110

Val Gly Ala Thr Pro Glu Ala Lys Phe Asp Ser Phe Val Ala Ser Leu
        115                 120                 125

Thr Glu Ala Leu Arg Val Ile Ala Gly Ala Leu Glu Val His Ala Val
    130                 135                 140

Lys Pro Val Thr Glu Asp Pro Ala Trp Pro Lys Ile Pro Ala Gly Glu
145                 150                 155                 160

Leu Gln Ile Ile Asp Lys Ile Asp Ala Ala Phe Lys Val Ala Ala Thr
                165                 170                 175

Ala Ala Ala Thr Ala Pro Ala Asp Asp Lys Phe Thr Val Phe Glu Ala
            180                 185                 190

Ala Phe Asn Lys Ala Ile Lys Glu Ser Thr Gly Gly Ala Tyr Asp Thr
        195                 200                 205

Tyr Lys Cys Ile Pro Ser Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala
    210                 215                 220

Ala Thr Val Ala Ala Ala Pro Gln Val Lys Tyr Ala Val Phe Glu Ala
225                 230                 235                 240

Ala Leu Thr Lys Ala Ile Thr Ala Met Ser Glu Val Gln Lys Val Ser
                245                 250                 255

Gln Pro Ala Thr Gly Ala Ala Thr Val Ala Ala Gly Ala Ala Thr Thr
            260                 265                 270

Ala Thr Gly Ala Ala Ser Gly Ala Ala Thr Val Ala Ala Gly Gly Tyr
        275                 280                 285

Lys Val
    290
```

<210> 201

<211> 264
<212> PRT
<213> Holcus lanatus

<400> 201

Ala Asp Ala Gly Tyr Thr Pro Ala Ala Pro Ala Ala Ala Gly Ala Gly
1 5 10 15

Gly Lys Ala Thr Thr Asp Glu Gln Lys Leu Leu Glu Asp Val Asn Ala
20 25 30

Gly Phe Lys Thr Ala Val Ala Ala Ala Ala Asn Val Pro Pro Ala Asp
35 40 45

Lys Tyr Lys Thr Phe Glu Ala Ala Phe Thr Ala Ser Ser Lys Ala Ser
50 55 60

Ile Ala Ala Ala Ala Thr Lys Ala Pro Gly Leu Ile Pro Gln Leu Asn
65 70 75 80

Ala Ala Thr Asn Thr Ala Tyr Ala Ala Ala Gln Gly Ala Thr Pro Glu
85 90 95

Ala Lys Tyr Asp Ala Phe Val Thr Thr Leu Thr Glu Ala Leu Arg Val
100 105 110

Ile Ala Gly Ala Leu Glu Val His Ala Val Lys Pro Ala Thr Glu Glu
115 120 125

Val Gly Ala Ala Lys Ile Pro Ala Gly Glu Leu Gln Ile Val Asp Lys
130 135 140

Ile Asp Ala Ala Phe Arg Ile Ala Ala Thr Ala Ala Asn Ala Ala Pro
145 150 155 160

Val Asn Asp Lys Phe Thr Val Phe Glu Gly Ala Phe Asn Lys Ala Ile
165 170 175

Lys Glu Ser Thr Gly Gly Ala Tyr Glu Ala Tyr Lys Phe Ile Pro Ser
180 185 190

Leu Glu Thr Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Thr Ala
195 200 205

```
Pro Glu Val Lys Tyr Thr Val Phe Glu Thr Ala Leu Lys Lys Ala Ile
    210                 215                 220

Thr Ala Met Ser Glu Ala Gln Lys Glu Ala Lys Pro Val Ala Ala Ala
225                 230                 235                 240

Thr Gly Ala Ala Thr Ala Ala Ala Gly Val Ala Ala Gly Ala Ala Thr
                245                 250                 255

Ala Ala Ala Gly Gly Tyr Lys Val
            260
```

<210> 202
<211> 287
<212> PRT
<213> Phleum pratense

<400> 202

```
Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu
1               5                   10                  15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Ala Pro
            20                  25                  30

Ala Thr Pro Ala Ala Ala Gly Ala Glu Ala Gly Lys Ala Thr Thr Glu
        35                  40                  45

Glu Gln Lys Leu Ile Glu Asp Ile Asn Val Gly Phe Lys Ala Ala Val
    50                  55                  60

Ala Ala Ala Ala Ser Val Pro Ala Ala Asp Lys Phe Lys Thr Phe Glu
65                  70                  75                  80

Ala Ala Phe Thr Ser Ser Ser Lys Ala Ala Thr Ala Lys Ala Pro Gly
                85                  90                  95

Leu Val Pro Lys Leu Asp Ala Ala Tyr Ser Val Ser Tyr Lys Ala Ala
            100                 105                 110

Val Gly Ala Thr Pro Glu Ala Lys Phe Asp Ser Phe Val Ala Ser Leu
        115                 120                 125

Thr Glu Ala Leu Arg Val Ile Ala Gly Ala Leu Glu Val His Ala Val
```

130 135 140

Lys Pro Val Thr Glu Glu Pro Gly Met Ala Lys Ile Pro Ala Gly Glu
145 150 155 160

Leu Gln Ile Ile Asp Lys Ile Asp Ala Ala Phe Lys Val Ala Ala Thr
165 170 175

Ala Ala Ala Thr Ala Pro Ala Asp Thr Val Phe Glu Ala Ala Phe Asn
180 185 190

Lys Ala Ile Lys Glu Ser Thr Gly Gly Ala Tyr Asp Thr Tyr Lys Cys
195 200 205

Ile Pro Ser Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val
210 215 220

Ala Ala Ala Pro Gln Val Lys Tyr Ala Val Phe Glu Ala Ala Leu Thr
225 230 235 240

Lys Ala Ile Thr Ala Met Ser Glu Val Gln Lys Val Ser Gln Pro Ala
245 250 255

Thr Gly Ala Ala Thr Val Ala Ala Gly Ala Ala Thr Thr Ala Ala Gly
260 265 270

Ala Ala Ser Gly Ala Ala Thr Val Ala Ala Gly Gly Tyr Lys Val
275 280 285

<210> 203
<211> 296
<212> PRT
<213> Holcus lanatus

<400> 203

Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Thr Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Ala Pro
20 25 30

Thr Thr Pro Ala Ala Ala Gly Ala Ala Ala Gly Lys Ile Thr Pro Thr
35 40 45

Gln Glu Gln Lys Leu Met Glu Asp Ile Asn Val Gly Phe Lys Ala Ala
50 55 60

Val Ala Ala Ala Ala Gly Ala Pro Pro Ala Asp Lys Phe Lys Thr Phe
65 70 75 80

Gln Ala Ala Phe Ser Ala Ser Val Glu Ala Ser Ala Ala Lys Leu Asn
85 90 95

Ala Ala Gln Ala Pro Gly Phe Val Ser His Val Ala Ala Thr Ser Asp
100 105 110

Ala Thr Tyr Lys Ala Ala Val Gly Ala Thr Pro Glu Ala Lys Phe Asp
115 120 125

Ser Phe Val Ala Ala Phe Thr Glu Ala Leu Arg Val Ile Ala Gly Val
130 135 140

Leu Lys Val His Ala Val Lys Pro Ile Thr Glu Glu Ile Gly Ala Ala
145 150 155 160

Lys Ile Pro Ala Gly Glu Leu Gln Ile Ile Asp Lys Ile Asp Ala Ala
165 170 175

Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
180 185 190

Phe Thr Val Phe Glu Ala Ala Phe Asn Asn Ala Ile Lys Glu Ser Thr
195 200 205

Gly Gly Ala Tyr Asp Thr Tyr Lys Ser Ile Pro Ser Leu Glu Ala Ala
210 215 220

Val Lys Gln Ala Tyr Ala Ala Thr Ile Ala Ala Ala Pro Glu Val Lys
225 230 235 240

Phe Ala Val Phe Lys Ala Ala Leu Thr Lys Ala Ile Thr Ala Met Ala
245 250 255

Glu Val Gln Lys Val Ser Lys Pro Val Ala Gly Ala Ala Thr Ala Ala
260 265 270

Thr Gly Ala Ala Thr Gly Ala Ala Gly Ala Ala Thr Gly Ala Ala Thr
275 280 285

Val Ser Ala Gly Gly Tyr Lys Val
290 295

<210> 204
<211> 303
<212> PRT
<213> Poa pratensis

<400> 204

Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Thr Val Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Ala Pro
20 25 30

Ala Thr Pro Ala Ala Ala Gly Ala Ala Ala Gly Lys Ile Thr Pro Thr
35 40 45

Gln Glu Gln Lys Leu Met Glu Asp Ile Asn Val Gly Phe Lys Ala Ala
50 55 60

Val Ala Ala Ala Ala Gly Ala Pro Pro Ala Asp Lys Phe Lys Thr Phe
65 70 75 80

Gln Ala Ala Phe Ser Ala Ser Val Glu Ala Ser Ala Ala Lys Leu Asn
85 90 95

Ala Ala Gln Ala Pro Gly Phe Val Ser His Val Ala Ala Thr Ser Asp
100 105 110

Ala Thr Tyr Lys Ala Ala Val Gly Ala Thr Pro Glu Ala Lys Phe Asp
115 120 125

Ser Phe Val Ala Ala Phe Thr Glu Ala Leu Arg Ile Ile Ala Gly Val
130 135 140

Leu Lys Val His Ala Val Lys Pro Ile Thr Glu Glu Thr Gly Ala Ala
145 150 155 160

Lys Ile Pro Ala Gly Glu Gln Gln Ile Ile Asp Lys Ile Asp Ala Ala
165 170 175

```
Phe Lys Val Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
            180                 185                 190

Phe Thr Val Phe Glu Ala Ala Phe Asn Asn Ala Ile Lys Glu Ser Thr
        195                 200                 205

Gly Gly Ala Tyr Asp Thr Tyr Lys Ser Ile Pro Ser Leu Glu Ala Ala
    210                 215                 220

Val Lys Gln Ala Tyr Ala Ala Thr Ile Ala Ala Ala Pro Glu Val Lys
225                 230                 235                 240

Phe Ala Val Phe Lys Ala Ala Leu Thr Lys Ala Ile Thr Ala Met Ala
                245                 250                 255

Glu Val Gln Lys Val Ser Lys Pro Val Ala Gly Ala Ala Thr Val Ala
            260                 265                 270

Ala Gly Ala Ala Thr Ala Ala Thr Gly Ala Ala Thr Gly Ala Ala Gly
        275                 280                 285

Ala Ala Thr Gly Ala Ala Thr Val Ser Ala Gly Gly Tyr Lys Val
    290                 295                 300
```

<210> 205
<211> 295
<212> PRT
<213> Phleum pratense

<400> 205

```
Ser Val Lys Arg Ser Asn Gly Ser Ala Glu Val His Arg Gly Ala Val
1               5                   10                  15

Pro Arg Arg Gly Pro Arg Gly Gly Pro Gly Arg Ser Tyr Ala Ala Asp
            20                  25                  30

Ala Gly Tyr Ala Pro Ala Thr Pro Ala Ala Ala Gly Ala Glu Ala Gly
        35                  40                  45

Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Asp Ile Asn Val Gly
    50                  55                  60
```

Phe Lys Ala Ala Val Ala Ala Ala Ala Ser Val Pro Ala Ala Asp Lys
65 70 75 80

Phe Lys Thr Phe Glu Ala Ala Phe Thr Ser Ser Ser Lys Ala Ala Thr
85 90 95

Ala Lys Ala Pro Gly Leu Val Pro Lys Leu Asp Ala Ala Tyr Ser Val
100 105 110

Ala Tyr Lys Ala Ala Val Gly Ala Thr Pro Glu Ala Lys Phe Asp Ser
115 120 125

Phe Val Ala Ser Leu Thr Glu Ala Leu Arg Val Ile Ala Gly Ala Leu
130 135 140

Glu Val His Ala Val Lys Pro Val Thr Glu Glu Pro Gly Met Ala Lys
145 150 155 160

Ile Pro Ala Gly Glu Leu Gln Ile Ile Asp Lys Ile Asp Ala Ala Phe
165 170 175

Lys Val Ala Ala Thr Ala Ala Ala Thr Ala Pro Ala Asp Asp Lys Phe
180 185 190

Thr Val Phe Glu Ala Ala Phe Asn Lys Ala Ile Lys Glu Ser Thr Gly
195 200 205

Gly Ala Tyr Asp Thr Tyr Lys Cys Ile Pro Ser Leu Glu Ala Ala Val
210 215 220

Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala Ala Pro Gln Val Lys Tyr
225 230 235 240

Ala Val Phe Glu Ala Ala Leu Thr Lys Ala Ile Thr Ala Met Ser Glu
245 250 255

Val Gln Lys Val Ser Gln Pro Ala Thr Gly Ala Ala Thr Val Ala Ala
260 265 270

Gly Ala Ala Thr Thr Ala Ala Gly Ala Ala Ser Gly Ala Ala Thr Val
275 280 285

Ala Ala Gly Gly Tyr Lys Val

290 295

<210> 206
<211> 281
<212> PRT
<213> Phleum pratense

<400> 206

Ala Val Pro Arg Arg Gly Pro Arg Gly Gly Pro Gly Arg Ser Tyr Ala
1 5 10 15

Ala Asp Ala Gly Tyr Ala Pro Ala Thr Pro Ala Ala Ala Gly Ala Glu
20 25 30

Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Asp Ile Asn
35 40 45

Val Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Ser Val Pro Ala Gly
50 55 60

Asp Lys Phe Lys Thr Phe Glu Ala Ala Phe Thr Ser Ser Ser Lys Ala
65 70 75 80

Ala Thr Ala Lys Ala Pro Gly Leu Val Pro Lys Leu Asp Ala Ala Tyr
85 90 95

Ser Val Ala Tyr Lys Ala Ala Val Gly Ala Thr Pro Glu Ala Lys Phe
100 105 110

Asp Ser Phe Val Ala Ser Leu Thr Glu Ala Leu Arg Val Ile Ala Gly
115 120 125

Ala Leu Glu Val His Ala Val Lys Pro Val Thr Glu Glu Pro Gly Met
130 135 140

Ala Lys Ile Pro Ala Gly Glu Leu Gln Ile Ile Asp Lys Ile Asp Ala
145 150 155 160

Ala Phe Lys Val Ala Ala Thr Ala Ala Ala Thr Ala Pro Ala Asp Asp
165 170 175

Lys Phe Thr Val Phe Glu Ala Ala Phe Asn Lys Ala Ile Lys Glu Ser
180 185 190

```
Thr Gly Gly Ala Tyr Asp Thr Tyr Lys Cys Ile Pro Ser Leu Glu Ala
        195                 200                 205

Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala Ala Pro Gln Val
    210                 215                 220

Lys Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala Ile Thr Ala Met
225                 230                 235                 240

Ser Glu Val Gln Lys Val Ser Gln Pro Ala Thr Gly Ala Ala Thr Val
                245                 250                 255

Ala Ala Gly Ala Ala Thr Thr Ala Thr Gly Ala Ala Ser Gly Ala Ala
            260                 265                 270

Thr Val Ala Ala Gly Gly Tyr Lys Val
        275                 280
```

<210> 207
<211> 284
<212> PRT
<213> Phleum pratense

<400> 207

```
Ala Ala Ala Ala Val Pro Arg Arg Gly Pro Arg Gly Gly Pro Gly Arg
1               5                   10                  15

Ser Tyr Thr Ala Asp Ala Gly Tyr Ala Pro Ala Thr Pro Ala Ala Ala
            20                  25                  30

Gly Ala Ala Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu
        35                  40                  45

Asp Ile Asn Val Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Ser Val
    50                  55                  60

Pro Ala Ala Asp Lys Phe Lys Thr Phe Glu Ala Ala Phe Thr Ser Ser
65                  70                  75                  80

Ser Lys Ala Ala Ala Ala Lys Ala Pro Gly Leu Val Pro Lys Leu Asp
                85                  90                  95

Ala Ala Tyr Ser Val Ala Tyr Lys Ala Ala Val Gly Ala Thr Pro Glu
```

100 105 110

Ala Lys Phe Asp Ser Phe Val Ala Ser Leu Thr Glu Ala Leu Arg Val
115 120 125

Ile Ala Gly Ala Leu Glu Val His Ala Val Lys Pro Val Thr Glu Glu
130 135 140

Pro Gly Met Ala Lys Ile Pro Ala Gly Glu Leu Gln Ile Ile Asp Lys
145 150 155 160

Ile Asp Ala Ala Phe Lys Val Ala Ala Thr Ala Ala Ala Thr Ala Pro
165 170 175

Ala Asp Asp Lys Phe Thr Val Phe Glu Ala Ala Phe Asn Lys Ala Ile
180 185 190

Lys Glu Ser Thr Gly Gly Ala Tyr Asp Thr Tyr Lys Cys Ile Pro Ser
195 200 205

Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala Ala
210 215 220

Pro Gln Val Lys Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala Ile
225 230 235 240

Thr Ala Met Ser Glu Val Gln Lys Val Ser Gln Pro Ala Thr Gly Ala
245 250 255

Ala Thr Val Ala Ala Gly Ala Ala Thr Thr Ala Ala Gly Ala Ala Ser
260 265 270

Gly Ala Ala Thr Val Ala Ala Gly Gly Tyr Lys Val
275 280

<210> 208
<211> 266
<212> PRT
<213> Phleum pratense

<400> 208

Ala Asp Ala Gly Tyr Ala Pro Ala Thr Pro Ala Ala Ala Gly Ala Glu
1 5 10 15

```
Ala Gly Lys Ala Thr Thr Glu Glu Gln Lys Leu Ile Glu Asp Ile Asn
            20                  25                  30

Val Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Ser Val Pro Ala Ala
        35                  40                  45

Asp Lys Phe Lys Thr Phe Glu Ala Ala Phe Thr Ser Ser Ser Lys Ala
    50                  55                  60

Ala Thr Ala Lys Ala Pro Gly Leu Val Pro Lys Leu Asp Ala Ala Tyr
65                  70                  75                  80

Ser Val Ala Tyr Lys Ala Ala Val Gly Ala Thr Pro Glu Ala Lys Phe
                85                  90                  95

Asp Ser Phe Val Ala Ser Leu Thr Glu Ala Leu Arg Val Ile Ala Gly
            100                 105                 110

Ala Leu Glu Val His Ala Val Lys Pro Val Thr Glu Glu Pro Gly Met
        115                 120                 125

Ala Lys Ile Pro Ala Gly Glu Leu Gln Ile Ile Asp Lys Ile Asp Ala
    130                 135                 140

Ala Phe Lys Val Ala Ala Thr Ala Ala Ala Thr Ala Pro Ala Asp Asp
145                 150                 155                 160

Lys Phe Thr Val Phe Glu Ala Ala Phe Asn Lys Ala Ile Lys Glu Ser
                165                 170                 175

Thr Gly Gly Ala Tyr Asp Thr Tyr Lys Cys Ile Pro Ser Leu Glu Ala
            180                 185                 190

Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala Ala Pro Gln Val
        195                 200                 205

Lys Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala Ile Thr Ala Met
    210                 215                 220

Ser Glu Val Gln Lys Val Ser Gln Pro Ala Thr Gly Ala Ala Thr Val
225                 230                 235                 240
```

```
Ala Ala Gly Ala Ala Thr Gly Thr Ala Ala Gly Ala Ala Ser Gly Ala
                245                 250                 255

Ala Thr Val Ala Ala Gly Gly Tyr Lys Val
            260                 265
```

<210> 209
<211> 240
<212> PRT
<213> Phleum pratense

<400> 209

```
Gln Lys Leu Leu Glu Asp Val Asn Ala Ser Phe Lys Ala Ala Val Ala
1               5                   10                  15

Ala Ala Ala Lys Val Pro Pro Ala Asp Lys Tyr Lys Thr Phe Leu Arg
            20                  25                  30

Ala Phe Thr Val Leu Asp Arg Gly Ser Thr Glu Gln Ser Lys Ala Glu
        35                  40                  45

Glu Thr Lys Met Pro Glu Leu Ser Ser Lys Leu Val Asp Ala Tyr Met
    50                  55                  60

Ala Ala Phe Lys Ala Ser Thr Gly Gly Thr Gln Glu Ala Lys Tyr Asp
65                  70                  75                  80

Ala Phe Val Thr Thr Leu Thr Glu Ala Leu Arg Val Ile Ala Gly Ala
                85                  90                  95

Leu Glu Val His Ala Val Lys Pro Ala Thr Glu Glu Val Pro Ala Ala
            100                 105                 110

Lys Ile Pro Ala Gly Asp Leu Gln Val Val Asp Lys Ile Asp Ala Ser
        115                 120                 125

Phe Lys Ile Ala Ala Thr Ala Ala Asn Ala Ala Pro Ala Asn Asp Lys
    130                 135                 140

Phe Thr Val Phe Glu Thr Ala Phe Asn Lys Ala Leu Lys Glu Ser Thr
145                 150                 155                 160

Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ser Leu Glu Ala Ala
                165                 170                 175
```

Val Lys Gln Ala Tyr Ala Ser Thr Val Ala Ala Ala Pro Glu Val Lys
180 185 190

Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala Ile Thr Ala Met Ser
195 200 205

Gln Ala Gln Lys Val Ala Gln Pro Ala Ala Ala Ala Thr Gly Ala Ala
210 215 220

Thr Val Ala Ala Gly Ala Ala Thr Thr Ala Ala Gly Gly Tyr Lys Val
225 230 235 240

<210> 210
<211> 294
<212> PRT
<213> Phalaris aquatica

<400> 210

Met Ala Val Gln Lys Tyr Thr Val Ala Leu Phe Leu Ala Met Ala Leu
1 5 10 15

Val Ala Gly Pro Ala Ala Ser Tyr Ala Ala Asp Ala Gly Thr Pro Pro
20 25 30

Thr Pro Ala Thr Pro Ala Val Pro Gly Ala Ala Ala Gly Lys Ala Thr
35 40 45

Thr His Glu Gln Lys Leu Ile Glu Asp Ile Asn Ala Ala Phe Lys Trp
50 55 60

Trp Pro Ala Ser Ala Pro Pro Ala Asp Lys Tyr Lys Thr Phe Glu Thr
65 70 75 80

Ala Phe Ser Lys Ala Asn Ile Ala Gly Ala Ser Thr Lys Gly Leu Asp
85 90 95

Ala Ala Tyr Ser Val Val Tyr Asn Thr Ala Ala Gly Ala Thr Pro Glu
100 105 110

Ala Lys Tyr Asp Ser Phe Val Thr Ala Leu Thr Glu Ala Leu Arg Ile
115 120 125

```
Met Ala Gly Thr Leu Glu Val His Ala Val Lys Pro Ala Thr Glu Glu
    130                 135                 140

Glu Val Pro Ser Ala Lys Ile Leu Arg Ala Asn Ser Arg Ser Ser Thr
145                 150                 155                 160

Arg Ser Ser Arg Phe Lys Ile Ala Ala Thr Val Ala Thr Pro Leu Ser
                165                 170                 175

His Ser Thr Ala Ala Asn Ser Ala Pro Ala Asn Asp Lys Phe Thr Val
            180                 185                 190

Phe Glu Gly Ala Phe Asn Lys Ala Ile Lys Glu Arg His Gly Gly Pro
        195                 200                 205

Thr Glu Thr Tyr Lys Phe Ile Pro Ser Leu Glu Ala Ala Val Lys Gln
    210                 215                 220

Ala Tyr Gly Ala Thr Val Ala Arg Ala Pro Glu Val Lys Tyr Ala Val
225                 230                 235                 240

Phe Glu Ala Gly Leu Thr Lys Ala Ile Thr Ala Met Ser Glu Ala Gln
                245                 250                 255

Lys Val Ala Lys Pro Val Arg Leu Ser Pro Gln Pro Pro Gln Val Leu
            260                 265                 270

Pro Leu Ala Ala Gly Gly Ala Ala Thr Val Ala Ala Ala Ser Asp Ser
        275                 280                 285

Arg Gly Gly Tyr Lys Val
    290
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<210> 211
<211> 320
<212> PRT
<213> Phalaris aquatica

<400> 211

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Met Ala Val Gln Lys Tyr Thr Met Ala Leu Phe Leu Ala Val Ala Leu
1               5                   10                  15

Val Ala Gly Pro Ala Ala Pro Thr Pro Pro Thr Pro Arg Thr Pro Pro
            20                  25                  30
```

```
Leu Leu Pro Pro Pro Arg Ala Arg Asp Lys Ala Thr Leu Thr Ser Arg
        35                  40                  45

Ser Val Glu Asp Ile Asn Ala Ala Ser Arg Arg Pro Trp Trp Ala Ser
    50                  55                  60

Val Pro Pro Ala Asp Lys Phe Lys Thr Phe Ala Asp His Val Leu Cys
65                  70                  75                  80

Val Pro Asn Ala Asp Val Thr Ser Ala Ala Thr Lys Ala Pro Gln Leu
                85                  90                  95

Lys Ala Lys Leu Asp Ala Ala Tyr Arg Val Ala Tyr Glu Ala Ala Glu
            100                 105                 110

Gly Ser Thr Pro Glu Ala Lys Tyr Asp Ala Phe Ile Ala Ala Leu Thr
        115                 120                 125

Glu Ala Leu Arg Val Ile Ala Gly Ala Phe Glu Val His Ala Val Lys
    130                 135                 140

Pro Ala Thr Glu Glu Val Val Ala Asp Pro Val Gly Glu Leu Gln Ile
145                 150                 155                 160

Val Asp Lys Ile Asp Ala Ala Phe Lys Ile Ala Ala Thr Ala Ala Asn
                165                 170                 175

Ser Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu Gly Ala Phe Asn
            180                 185                 190

Lys Ala Ile Lys Glu Ser Thr Ala Gly Ala Tyr Glu Thr Tyr Lys Phe
        195                 200                 205

Ile Pro Ser Leu Glu Ala Ala Val Lys Gln Ala Tyr Gly Ala Thr Val
    210                 215                 220

Ala Arg Ala Pro Glu Val Lys Tyr Ala Val Phe Glu Ala Gly Leu Thr
225                 230                 235                 240

Lys Ala Ile Thr Ala Met Ser Glu Ala Gln Lys Val Ala Lys Pro Pro
                245                 250                 255
```

```
Leu Ser Pro Gln Pro Pro Gln Val Leu Pro Leu Ala Ala Gly Gly Ala
            260                 265                 270

Ala Thr Val Ala Ala Ala Ser Asp Val Arg Val Cys Arg Ser His Gly
        275                 280                 285

Thr Leu Gln Asp Ala Cys Leu Leu Arg Cys Arg Gly Gly Cys Gln Pro
    290                 295                 300

Val Val Trp Arg Gly Gly Ser His Arg Ala Arg Gly Gly Tyr Lys Val
305                 310                 315                 320
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<210> 212
<211> 313
<212> PRT
<213> Hordeum vulgare

<400> 212

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Met Ala Asn Ser Gly Arg Glu His Ser Ala Val Pro Arg Arg Arg Asn
1               5                   10                  15

Leu Val Ala Leu Val Pro Arg His Gly Cys Tyr Ala Glu Phe Ser Leu
            20                  25                  30

Tyr Val Cys Val Gly Asn Ile Asn Ala Pro Phe Pro Val Phe Asn Arg
        35                  40                  45

Thr Thr Phe Ile Ala Asn Ala Gly Ile Glu Ala Glu Leu Glu Pro His
    50                  55                  60

Phe Leu Leu Leu Leu Phe Thr Phe Ser Ser Ser Ser Ser Phe Phe Thr
65                  70                  75                  80

Leu Leu Lys Thr Met Ile His Phe Thr Asp Arg Ser Asp Asn Lys Asn
                85                  90                  95

Lys Ala Met Met Arg Gly Arg Glu Phe Arg Lys Ala Phe Ala Glu Val
            100                 105                 110

Leu Lys Gly Ala Ala Thr Gly Gln Ile Ala Gly Gln Ser Ser Ser Met
        115                 120                 125

Ala Lys Leu Ser Ser Ser Leu Glu Leu Ser Tyr Lys Leu Ala Tyr Asp
```

130 135 140

Lys Ala Gln Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala
145 150 155 160

Thr Leu Thr Glu Ser Leu Arg Val Ile Ser Gly Thr Leu Glu Val His
165 170 175

Ser Val Lys Pro Ala Ala Glu Glu Val Lys Gly Val Pro Ala Gly Glu
180 185 190

Leu Lys Ala Ile Asp Gln Val Asp Ala Ala Phe Arg Thr Ala Ala Thr
195 200 205

Ala Ala Asp Ala Ala Pro Ala Asn Asp Lys Phe Thr Val Phe Glu Ser
210 215 220

Leu Gln Gln Gly Pro Ser Arg Lys Pro Arg Gly Gly Ala Tyr Glu Ser
225 230 235 240

Tyr Lys Phe Ile Pro Ala Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala
245 250 255

Ala Thr Val Ala Ala Ala Pro Glu Val Lys Phe Thr Val Phe Gln Thr
260 265 270

Ala Leu Ser Lys Ala Ile Asn Ala Met Thr Gln Ala Gln Lys Val Ala
275 280 285

Lys Pro Ala Ala Ala Ala Thr Ala Thr Ala Thr Val Ala Ala Gly Ala
290 295 300

Ala Ala Thr Ala Gly Asn Tyr Lys Val
305 310

<210> 213
<211> 179
<212> PRT
<213> Hordeum vulgare

<400> 213

Leu Glu Leu Ser Tyr Lys Leu Ala Tyr Asp Lys Ala Gln Gly Ala Thr
1 5 10 15

Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala Thr Leu Thr Glu Ser Leu
20 25 30

Arg Val Ile Ser Gly Thr Leu Glu Val His Ser Val Lys Pro Ala Ala
35 40 45

Glu Glu Val Lys Gly Val Pro Ala Gly Glu Leu Lys Ala Ile Asp Gln
50 55 60

Val Asp Ala Ala Phe Arg Thr Ala Ala Thr Ala Ala Asp Ala Ala Pro
65 70 75 80

Ala Asn Asp Lys Phe Thr Val Phe Glu Ser Leu Gln Gln Gly Pro Ser
85 90 95

Arg Lys Pro Arg Gly Gly Ala Tyr Glu Ser Tyr Lys Phe Ile Pro Ala
100 105 110

Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala Ala
115 120 125

Pro Glu Val Lys Phe Thr Val Phe Gln Thr Ala Leu Ser Lys Ala Ile
130 135 140

Asn Ala Met Thr Gln Ala Gln Lys Val Ala Lys Pro Ala Ala Ala Ala
145 150 155 160

Thr Ala Thr Ala Thr Val Ala Ala Gly Ala Ala Ala Thr Ala Gly Asn
165 170 175

Tyr Lys Val

<210> 214
<211> 210
<212> PRT
<213> Vespula vulgaris

<220>
<221> MISC_FEATURE
<222> (1)..(210)
<223> where X is any amino acid

<400> 214

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Xaa Xaa Glu Ala Glu Phe Asn Asn Tyr Cys Lys Ile Lys Cys Leu Lys
1               5                  10                  15

Gly Gly Val His Thr Ala Cys Lys Tyr Gly Ser Leu Lys Pro Asn Cys
            20                  25                  30

Gly Asn Lys Val Val Val Ser Tyr Gly Leu Thr Lys Gln Glu Lys Gln
        35                  40                  45

Asp Ile Leu Lys Glu His Asn Asp Phe Arg Gln Lys Ile Ala Arg Gly
    50                  55                  60

Leu Glu Thr Arg Gly Asn Pro Gly Pro Gln Pro Pro Ala Lys Asn Met
65                  70                  75                  80

Lys Asn Leu Val Trp Asn Asp Glu Leu Ala Tyr Val Ala Gln Val Trp
                85                  90                  95

Ala Asn Gln Cys Gln Tyr Gly His Asp Thr Cys Arg Asp Val Ala Lys
            100                 105                 110

Tyr Gln Val Gly Gln Asn Val Ala Leu Thr Gly Ser Thr Ala Ala Lys
        115                 120                 125

Tyr Asp Asp Pro Val Lys Leu Val Lys Met Trp Glu Asp Glu Val Lys
    130                 135                 140

Asp Tyr Asn Pro Lys Lys Lys Phe Ser Gly Asn Asp Phe Leu Lys Thr
145                 150                 155                 160

Gly His Tyr Thr Gln Met Val Trp Ala Asn Thr Lys Glu Val Gly Cys
                165                 170                 175

Gly Ser Ile Lys Tyr Ile Gln Glu Lys Trp His Lys His Tyr Leu Val
            180                 185                 190

Cys Asn Tyr Gly Pro Ser Gly Asn Phe Lys Asn Glu Glu Leu Tyr Gln
        195                 200                 205

Thr Lys
    210
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<210> 215
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<220>
<221> CDS
<222> (4)..(36)
<223>

<400> 215
ccg ctc gag aaa aga aac aat tat tgt aaa ata aaa tg 38
Leu Glu Lys Arg Asn Asn Tyr Cys Lys Ile Lys
1 5 10

<210> 216
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 216

Leu Glu Lys Arg Asn Asn Tyr Cys Lys Ile Lys
1 5 10

<210> 217
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Kex2 cleavage site

<400> 217

Glu Ala Glu Ala Glu Phe
1 5